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Psychosocial Food-Related Behavior and Food Intake of Adult Main Meal Preparers of Food for 9-10 Year-Old Children Participating in iCook, a Five-State Childhood Obesity Pilot Prevention Study

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PSYCHOSOCIAL FOOD-RELATED BEHAVIOR AND FOOD INTAKE OF ADULT MAIN MEAL PREPARERS OF FOOD FOR 9-10 YEAR-OLD CHILDREN PARTICIPATING IN ICOOK, A FIVE-STATE CHILDHOOD OBESITY PILOT PREVENTION STUDY

by

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Understanding adult outcomes of programs aimed at childhood obesity prevention is necessary because parents/caregivers are the most important influence on a child's physical activity and eating habits. Based on the principles of the social cognitive theory, the iCook 4-H pilot study taught dyads consisting of 9-10 year-old children and their primary meal preparers cooking skills, healthy shopping and meal habits, and easy ways to incorporate physical activity as a family. The program took place in five states, Maine, Nebraska, South Dakota, Tennessee, and West Virginia. In each state, adult-youth dyads (n = 54) were recruited by 4-H programs and nutrition educators and/or paraprofessionals, through flyers, e-mails, and in-person contact. The data collected measured self-reported food intake, food procurement and preparation practices, food safety, parent-child feeding relationships, family mealtime routines, quality of life, height and weight, and demographics through seven instruments at baseline and after program completion. Descriptive statistics, two-related samples tests and paired samples T tests were used to assess the data at a $p < 0.05$ level of significance. Eighty–two percent of participants were female and 18% were male. Most had either completed a bachelor's degree (31.3%) or some college (29.2 %). At program conclusion, participants significantly improved meal planning ($p= 0.007$), including prioritizing healthy meal choices ($p = 0.050$), shopping with a grocery list ($p = 0.045$), and reading the 'Nutrition

Facts' labels ($p = 0.015$). Parent-child feeding interactions, such as decreased control over food and using food as a reward ($p = 0.023$) were significantly more desirable after the program. Adults became significantly more confident with their cooking skills ($p = 0.015$), expressed a desire to cook more meals at home ($p = 0.015$), and purchased significantly fewer meals from fast food restaurants ($p = 0.033$). Fruit juice (100%), vegetable soup, and whole grain consumption significantly improved ($p = 0.012$, $p < 0.0001$, $p = 0.009$). The iCook 4-H pilot study was effective in teaching many meal planning, cooking, and physical activity skills that families put into practice.

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Acknowledgments

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CHAPTER 1
INTRODUCTION

Today nearly one in three American children and adolescents are overweight or obese (1). Overweight and obesity put children at risk for a wide array of issues including cardiovascular disease, increased health care costs, and premature death (2). More so, obese children are likely to remain obese as adults, with potential complications of adult obesity including stroke, coronary heart disease, hypertension, and type 2 Diabetes (2). Because of the severity of the prevalence and potential complications of obesity, interventions are necessary to address this growing health issue. Nutrition education is an example of an implementation strategy for reducing and preventing obesity.

There have been many formats explored for nutrition education programs to aid in the prevention, or to act as an intervention, for the United States' (US) childhood obesity epidemic. The overarching goal for these programs is to develop a curriculum that reaches a vast audience and yields desirable and measurable health outcomes such as improved blood chemistry profiles, decreased waist circumferences and body mass indexes (BMIs), positive eating behaviors, and more time spent being physically active (3, 4). Where many programs promote positive habits and lifestyle choices, the ultimate goal is to discover factors that will improve physical wellbeing, as well as develop an understanding of how these factors work synergistically to obtain desirable and sustainable results. To date, many nutrition education programs have implemented child-only or family-centered nutrition education approaches (5, 6, 7), and evidence suggests that family-centered programs, targeting both the parent and the child, are more effective treatments than child-only interventions (8, 9). Few studies, however, have examined the

secondary benefits of the family-centered programs, especially in regard to the improved health practices of the participating adults.

The iCook 4-H program, based on the social cognitive theory (SCT) (Figure 1.) and 4-H experiential learning model (Figure 2.), hypothesizes that living a healthful lifestyle is a family affair, and by completing the education sessions together as a family, both the youth and adult meal preparer (dyads) will not only increase their nutrition knowledge, culinary competence, and physical activity levels but also show improvements in physical health. 4-H promotes youth to interact with adults and peers to create an extensive support system at the community, state, and national level (10). In 4-H, adults act as role models in the realms of leadership and community outreach, allowing youth to learn through both observational and hands-on methods, making this program fit well into the constructs of SCT (10). Learning occurs in a positive environment, so youth will be apt to develop self-efficacy in applying their newly learned skills and in reaching pre-determined goals. Conducted by a five-state team of researchers (Maine, South Dakota, Tennessee, West Virginia, and Nebraska), iCook 4-H educates through a "learn by doing" approach. In this program, 9-10-year-old youth from rural, diverse, and/or low-income populations team with a primary meal preparer to attend six wellness-education sessions together. In completing the sessions together as a pair, reciprocal role modeling occurred both during the sessions and at home (10). Each session focused on a MyPlate food group, developing basic culinary skills, promoting family mealtime, and educating about the importance of physical activity and ways to stay active as a family. Goal setting was also a component of this program, and to stay actively engaged toward reaching nutrition and fitness goals, youth were encouraged to

create and share short interactive videos of themselves cooking, being physically active, or attending family meal times. Youth were provided with a video camera for their recordings, which they posted to a secure study website. The use of Internet technologies is an effective method of promoting health behavior, because it is a platform that young people "enjoy, relate to, and are familiar with" using (11). The repeated exposure of ideas taught in the iCook lessons with video postings and web visits helped reinforce concepts and behaviors.

The iCook 4-H program was rooted in Community-Based Participatory Research (CBPR) principles. With CBPR, a partnership is developed with community members to define the problem at hand and help develop solutions that result in socially relevant outcomes (10, 12). The program educated dyads in a variety of community settings, in various regions of the country, along with other participating dyads. The hope for this arrangement is that participants will provide a supportive environment, motivating those in the program to stay committed and together reap the desired health benefits. This model is environmentally sensitive, taking into account socioeconomic status, neighborhood features and norms of its inhabitants, and food availability. Steering committees composed of academic researchers, Extension specialists, 4-H professionals, and representatives from the priority population and key community stakeholders formulated the five states participating in the program (10). During the program, committees held regular meetings through conference calls and webinars for overall project collaboration. The collaborative nature of this project also applied to the study participant/researcher relationship, where working together to enhance knowledge and

achieve goals will hopefully create mutual respect and accountability to succeed in the environment in which participants are comfortable.

In completing the iCook sessions, improved self-efficacy in ability to use the information taught in class in a practical manner, will occur at home through reciprocal role modeling and through the creation of videos practicing the skills (10). A major aim of the study is that children will be positively influenced by their adult role models, regarding food preferences and physical activity levels (13), and throughout the participation in the iCook program the main meal preparer will develop greater health knowledge, culinary skills, self-efficacy, and a newfound realization of their responsibility as a positive health example. This prompted the questions: 1) Will children be able to "learn by doing" from the iCook session attendance/through the at-home support and direction of their primary meal provider; and 2) Will the meal providers in turn also exhibit behavioral improvements as a secondary project outcome? In other words, will family participation in this activity benefit the family as a whole?

Another question that can be answered through the completion of this pilot study is what aspect of the program promotes the greatest benefit, whether this may be improved culinary skills, emphasis on family meal times, or increased physical activity. Perhaps the combination of all foci carries equal weight in promoting healthy living, or possibly other variables such as the extended support system or use of interactive technologies are the defining components. To measure success, program participant outcomes were measured at pre and post program implementation. Acceptance of the hypothesis will occur if the adult primary meal preparer improves in the following areas from pre- to post-assessment:

- Food intake, based on the series of screener, including the National Cancer Institute food screeners.
- Kitchen proficiency, based on the Cooperative Extension Behavior Checklist
- The feeding relationship, based on the Birch Child Feeding Questionnaire.
- Family mealtime routine, based on the Family Meal Time Routine instrument.
- Mealtime, cooking, shopping, and exercise practices based on the Program Evaluation Survey
- Quality of life, based on the CDC Quality of Life Survey

Figure 1.

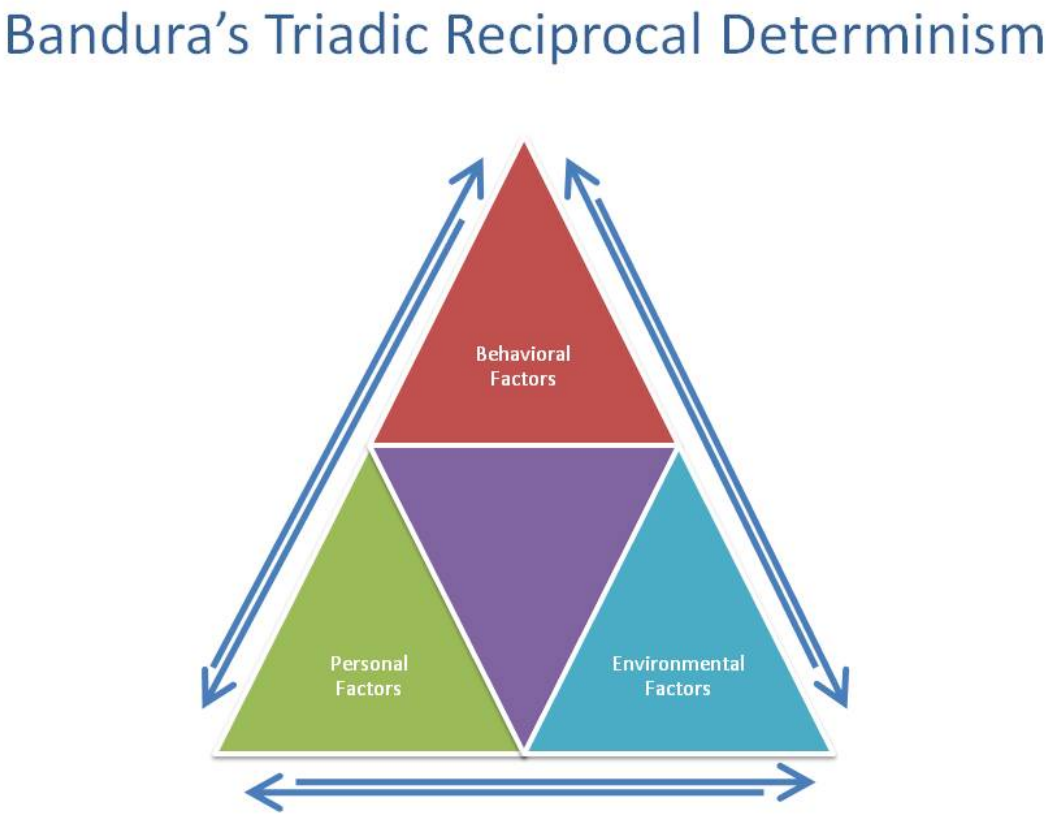
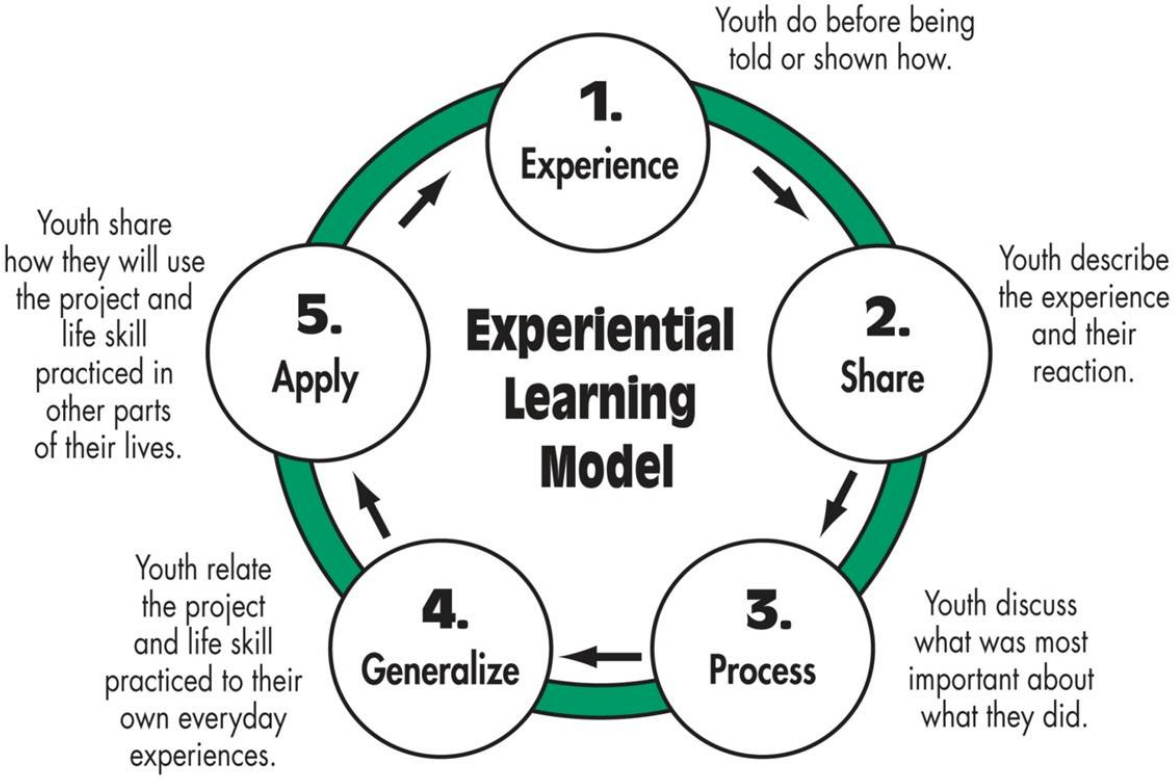

Bandura's Triadic Reciprocal Determinism
Behavioral Factors
Personal Factors
Environmental Factors

Figure 2.



CHAPTER 2
LITERATURE REVIEW

Community and family-based nutrition education sessions are emerging as effective intervention methods in addressing childhood obesity. Childhood obesity is a chronic issue, because not only does it affect one in three American children and adolescents (7), it can also lead to a variety of issues, including hyperlipidemia, hypertension, abnormal glucose tolerance, and psychosocial difficulties (14). Families may play an important role in combatting the emerging obesity epidemic because lifestyle habits developed as a young child carry over into adulthood (5, 15). Adults practice similar lifestyle habits learned as children, in turn influencing their own families and continuing either healthy or unhealthy habits for future generations. Parents have an influential role in developing a child's eating habits, acting as the "nutritional gatekeepers" to instruct their children about what foods to eat and how much to eat (16), and are also role models in shaping physical activity levels (13). The concept of "learning through modeling" is supported by the Social Cognitive Theory (SCT). The SCT evolved from Bandura's Social Learning Theory (1977), an educational and psychological theory that emphasizes modeling and reinforcement of desired behaviors from those who have a significant influence, such as family members (17).

The SCT posits that one's social environment has a direct influence on behavior, rather than personal characteristics alone, and focuses on how both personal characteristics and environmental influences combine to yield behavioral outcomes (18). The five major constructs of the SCT are knowledge, perceived self-efficacy, outcome expectations, goal formation, and socio-structural factors. This theory has been

incorporated into many nutrition intervention programs as a way to promote and improve behavior through modeling and receiving reinforcements from significant others, especially from parents.

Parental involvement is a valuable component to a childhood obesity intervention program. According to a review of studies of childhood obesity intervention/prevention programs, when parents were directly engaged in the process, results were more favorable compared to studies where parents were not directly involved (i.e. child-only or parent-only interventions) (19). Parents project both direct and indirect dietary influences on their children (20). Direct influences include the amounts and types of food in the house, as well as how the food is prepared. Indirect influences include the modeling of mealtime routines, the amount of money spent on food, and whether food is used as reward or punishment (20). For children less than 12 years of age, family-based intervention programs that incorporate behavior therapy, especially in the realms of physical activity and dietary change, have shown to be effective in maintaining a healthy weight (6). Parents and primary caregivers can impact children's lifestyle and nutrition choices either in positive or negative ways through modeling mechanisms.

Parents and primary caregivers have the roles of modeling behaviors related to eating and physical activity, regulating the household food available and the accessibility of exercise, reinforcing dietary and physical activity behaviors, and by creating and enforcing rules about how time and resources will be used (21, 22). Besides modeling, parents/caregivers can also help reinforce information to youth about nutrition and exercise knowledge. Hopper et al. (1996) found that parents of second and fourth-grade students who participated in a school-based nutrition and fitness education program had

children who demonstrated more nutrition and fitness knowledge compared with a control condition (17). Parents also enhanced their knowledge on fitness and healthy eating. Obtaining more knowledge about healthy lifestyle choices is a valuable asset in the quest for healthier living, therefore also a necessary piece of an effective nutrition education intervention, because increased knowledge may equate to behavior change. In this particular study, for example, there was a significant association between degree of family involvement in the education program with the amount of grains and cholesterol consumed (higher grain consumption and lower cholesterol intake) (17).

Predictors of Successful Nutrition Education Interventions

When developing a successful nutrition education program, it is essential to have an understanding about what factors may predict success. Success, for example, can be measured by decreased BMI z-scores, increased physical activity, and enhanced nutrition and fitness knowledge, but can only truly be defined by achieving the particular program's desired behavior modification. The most effective interventions had similar features, such as parental involvement, restructuring the home environment, prompting self-monitoring and goal setting, focusing on energy intake and nutrient density of foods consumed, and being aware of potential barriers to reaching goals (23). Most family-based weight loss programs have a child-only instructional focus, where "the obese child is the main agent of change" (24). According to Golan and Crow (2004), however, when parents were the main targets of the intervention, overweight children lost more weight and developed healthier eating habits (24) than the child-only instructed groups.

The interventions were more effective when many types of behavior-change techniques were implemented (23). For example, the British Families for Health, two-

year follow-up study, showed positive improvements (6). *Families for Health* was a 12-week program with parallel groups for parents and children, addressing parenting skills, healthy lifestyles, and emotional wellbeing. After two years, children showed a decrease in BMI z-score from baseline, an increased quality of life, an improved parent-child relationship, improved eating and physical activity habits, and a betterment of mental health for parents (6).

When parents have the incentive of improving their own health, children may also experience greater health outcomes. One of the most powerful factors in treating childhood obesity and maintaining a healthy weight is the parents' involvement in their personal weight loss efforts, while simultaneously helping facilitate their child's weight maintenance (22, 25, 26). A study by Hunter et al. (2008) measured the impact of parental weight loss on their child's BMI, with the single greatest predictor of change in children's BMI being parental weight loss (21), meaning that parents who learned and used proper behavior management techniques were critical influences to the success in the child's weight loss and long-term weight maintenance. Through modeling a parent managing his or her own weight, children were more apt to make similar healthy lifestyle choices, such as being physically active and eating nutrient-dense foods (21). Although the parent's actual motivation for living a healthful lifestyle is to help their child maintain a healthy weight, the affecting behaviors also help control his or her own weight status because of the similar environmental characteristics.

Predicting the success of a nutrition education/intervention program is a multifaceted process, and desired outcomes may or may not occur even if the aforementioned features are present. Many additional predictors come into play. Some

may instead predict an increased risk of failure, such as entering the program as an older child, because poor habits have had more time to develop, maternal depression, maternal avoidant attachment attitude, and the presence of obese siblings (27). Depressed mothers tend to be more withdrawn and are more prone to act negatively toward the child (28), creating an unsupportive environment in the child's attempts to adhere to their eating and physical activity treatments. Avoidant attachment styles lead to a poor patient-provider relationship, or in this case, child-parent relationship. Children of an unattached mother are unfamiliar with being in close relationships, so he or she may have a less trusting relationship with a teacher or therapist (27). From a nutrition standpoint, parenting style is reflective in a parent's "feeding style."

Parent-Child Relationship and Feeding Behaviors

Although there is no formal definition for parental feeding styles, feeding relationships between child and meal provider are somewhat analogous to already-documented parenting styles (authoritarian, authoritative, and permissive) (20). Parental feeding styles are related to child nutrition outcomes, because parents have some general control of factors that may influence a child's food intake, such as amount of electronic time allowed and the parents' own influence towards feeding and mealtimes (20). For example, parents who exhibit high levels of control in their feeding practices (authoritarian), are more prone to raise children who are incapable of reading and adhering to satiation cues, so the child will be more likely to eat even when not hungry (29, 30). Feeding practices, such as forcing children to clean their plates, may be detrimental to their health because they are less able to recognize appetite control signals and this practice may lead to disordered eating. An explanation for this trend is that these

children may be resentful of not having control of their eating habits and later fight for the control they were previously lacking. On the opposite end of the spectrum, evidence suggests that parents who are permissive in their feeding habits may raise children having disproportionately higher BMIs (31) because of a lack of boundaries and regulation in child food choices (32). Authoritative feeding, also known as democratic feeding, is the middle ground of the feeding styles, and appears to rear the most nutritionally adjusted children, because this practice incorporates setting appropriate boundaries within the context of shared decision-making and effective ability to manage conflicts (33, 34, 35). When developing a health behavior change program, a potential variable to include is improving authoritative parenting styles, such as setting appropriate boundaries and providing a nurturing environment (33).

Outside of feeding style, parents' own eating habits and attitudes impact their children's eating habits and attitudes. In families with mothers and fathers exhibiting high levels of dietary restraint (most likely in the form of dieting for weight loss), parents had higher mean BMIs than parents who were well rounded in their food choices (36). Those with higher levels of restraint also tended to exhibit higher levels of dis-inhibition (abandoning control of dietary intake), and the children of these parents (who reported high levels of restraint and dis-inhibition) had greater increases in their BMI than those of parents who showed the lowest levels of restrain and dis-inhibition (36). Hebebrand et al. (2001) found that parental BMI was not associated with any therapeutic outcomes in obesity interventions, but rather sibling-sibling BMI correlations were consistently higher than parent-offspring correlations in predicting lack of intervention success (37). To offer an explanation for these study findings, having obese siblings not actively engaged in the

intervention (and continuing his/her sedentary and poor eating habits) discourages and distracts the focus of the child in the intervention (27).

Parental gender may also have an effect on an overweight child's weight loss status. The Framingham Children's Study showed that the mother's obesity was a stronger predictor of the child's weight status than the father's level of obesity (36). These findings further suggest that negative eating behaviors modeled by parents, especially the mother, put the child at an increased risk for becoming obese. Data from the Québec Longitudinal Study of Child Development, (38) found that for girls, having either an overweight/obese mother or father had a significant positive effect on being overweight/obese at age 7. Interestingly, for boys having just an overweight/obese father predicted greater odds for obesity, but for boys, there was no correlation for increased risk of obesity with having an overweight mother (38), suggesting that young girls are more at risk of becoming obese, if one or both parents are obese, compared with young boys. Gender differences in socialization may be an explanation, where girls are more socialized to imitate both parents, "boys' socialization encourages greater autonomy and a stronger tendency to imitate the same-gender parent" (38). With the trends of child weight and parent weight, heredity may also be a contributing factor.

Many studies focus on the mother/child feeding relationship. A negative mother-child relationship may be detrimental to the health of a child. Kalucy (1976) elaborated on what constitutes a negative mother-child feeding relationship with three main observations. First, the mother lacks confidence, so her responses and feelings towards the child are rooted in anxiety and uncertainty; secondly, food is used as comfort or to reward desired behavior; and third, obesity is valued by the mother as evidence she is

feeding the child well and being a satisfactory parent (39, 40). Bruch and Touraine's (1940) study, involving a selective group of 40 families all containing an obese child, found some distinct personality traits exhibited by mothers. After extensive interviews and observations of the parent-child relationship, she found that the mothers tended to be domineering, and her relationship with her child was insecure (39, 41). The mother would compensate for the insecure relationship by using food as a substitute for love, and would discourage physical activity, suggesting it to be bad for the child's health (39). This same study found fathers to play more of a subordinate role to the mothers, and they were often treated with contempt from their wives (39, 41). In these families, the children were normally not close with the father, but were over-dependent on the mother.

A similar finding by Birch and Fisher (2000) reported that a mothers' perception of her daughter's level of dietary restraint and risk of becoming overweight influenced the way the mother fed the child, and predicted the daughter's eating habits and weight at age five (42). Young children, when un-coerced, are normally able to do an adequate job of self-regulating their diets (30), but when immersed in a family environment that practices high levels of dietary restraint and dis-inhibition, children lose their autonomy in food choices due to the excessive control imposed on their diets (36). In this case, mothers also negatively influenced their daughters' dietary habits by modeling inappropriate eating behaviors.

Parental obesity is yet another strong predictor of childhood obesity (43, 44) and visa versa, with more than 50% of obese adolescents remaining obese into adulthood (45). Genetic factors in taste and physical activity preferences and previously shared overweight-prone environments may account for this statistic. Children born to obese

parents tend to prefer the taste of fatty foods, overeat, consume few vegetables, and show a stronger preference for sedentary activities compared to their leaner counterparts (46). These results are consistent with the adult population as well, where existing data shows that obese adults have greater preferences for high-fat, energy-dense foods, (47), are more likely to overeat in negative emotional states (in the absence of perceived hunger) (48), and are more inactive (49).

Relationship between Family Environment, Family Composition, and Child Weight Status

Although genetics are a strong predictor of obesity (37), family environment is a key component to weight status, and may provide the greatest avenue for health improvements because of its immediacy and strong influences. A child is at increased risk of becoming obese if he or she lives with another obese individual, whether biologically related or not (50). There are several other familial characteristics that predict childhood obesity, one being family size. Families with obese children tend to have fewer members (51). Whitelaw (1971) provides two possible explanations for this finding: First, in the smaller families with only children, parents may be more prone to persuade that one child to eat; secondly, in larger families there is less food to go around (51). Another predictor of obesity is time spent in a familiar social context; those being uprooted more frequently having the greater tendency to be obese.

In a study of adult women whose families immigrated to the US, the prevalence of obesity decreased the longer the generations of the family had been in the country (39, 52). Another study, focusing on the Hmong population's dietary and physical activity

acculturation into the US, found the opposite to be true. As the Hmong immigrated and became accustomed to the food environment in the US, they have undergone negative changes to their health status (53). Whereas in some instances an immigrant population introduces healthy foods common to their culture to their new environment, most often the population adopts the eating behaviors of the host population. US lifestyle behaviors proved to create an obesogenic environment for the Hmong population, possibly due to a make-up in calorie consumption from a previously food-insecure environment in native countries. Since under-nutrition was a previous cause for concern, over-nutrition was not perceived as being a health risk (53). These findings suggest that environmental factors can have both positive and negative impacts on health. When designing community-based health interventions, program planners should be culturally sensitive and take into account surroundings that promote both health successes and failures, with the focus on promoting success and minimizing failures.

Families containing at least one obese individual tend to share similar dominance and decision-making patterns. A study by Bromberg (1977), in which triads of a mother, father and obese adolescent daughter were administered a decision-making questionnaire, indicated that families composed of obese individuals "made less unanimous and more chaotic decisions than non-obese families," and obese adolescents had less involvement in family decision-making (39,54). Family connectedness may decrease emotional stress for its members and is associated with better health outcomes in overweight adolescents (55). In a study by Hasenboehler et al. (2009) ranking family hierarchy values, a lower family-hierarchy score signals familiar disorganization and is associated with higher child BMIs, as well as higher values of emotional eating on the part of the child's mother (56).

The findings of this study highlight the interrelatedness between unstructured families, emotional and restrained eating, and propensity for overweightness.

Another finding, which may or may not support the obesity by example theory, is that families are blind to weight status. Parents often fail to recognize overweight status in both themselves and their children (38, 57), while children do not necessarily view their parents as obese, even if they are aware they meet the clinical definition. This phenomenon can be termed “mutual blindness.” Mutual blindness in relation to obesity contributes to withstanding family norms that are non-conducive to good health. As a result, family members may unconsciously internalize these unhealthy behaviors as being commonplace (38). In this view, the key to the fight against obesity begins in changing the family norms of obese families.

From an organizational systems approach, the family is viewed as a complete system functioning with many constituent parts (the family members) (39). The behaviors of each individual family member interacts to create overall systematic family behaviors. Therefore, if a family is considered dysfunctional, every member is responsible for maintaining the dysfunctional status. From this standpoint, many professionals argue that family-centered therapy is the most viable treatment option, with this treatment also considered suitable for weight management. To address the emerging obesity epidemic in the most optimal way possible, it will be necessary to focus on the root of the issue and make a priority to address the lifestyles and home environments at the family level. In programs that target family lifestyle changes, children and adults together acquire positive behaviors that are permanently engrained as eating and lifestyle patterns.

Family Meal Times

A major lifestyle pattern of interest in current family interventions is promoting family mealtimes. Dining together as a family demonstrates to family members that time spent together is a high priority. During family meal times, family members are able to discover what is important, enjoyable, or difficult in each other's lives (58). Through this shared dialogue, families are better able to provide support for one another.

Currently, "the lone eater" is ever prevalent in the dining culture (3). Few people make a priority of synchronizing the busy schedules characteristic of working fathers, mothers, and children participating in school activities, so consequently many people get into the habit of dining alone. This absence of social connectedness, formulated when people sit down together for meals, makes eating lose some of its significance. No longer is a meal a planned break in the day, but rather a time to squeeze in some nutrition then continue to work.

There is also evidence that one of the explanations for the French Paradox may be related to the time taken to consume a meal. The French, although they typically consume smaller portions than Americans, tend to spend more time eating (59). Many French citizens hold their cuisine to high standards, so even though the portions are small, the quality of food is high, so people tend to linger at meals, focus more on the dining experience, and refrain from much snacking during the day (59). A conclusion from these findings is that the French have a different food experience than Americans, possibly contributing to more positive attitudes towards food, resulting in positive meal practices and more favorable health profiles.

A study by Lytle et al. (2011) researched prevalence of positive family meal practices with parental weight status and found that families with an overweight parent had fewer positive family meal practices compared with families containing a representative parent of normal weight (60). Positive family meal practices included dining together as a family, serving at least one fruit and vegetable at the meal, absence of soft drinks, and absences of electronic devices during meal times. Educating adults on the importance of these positive meal practices may have a viable impact on overall family weight status.

Physical Activity

Increased physical activity is another important lifestyle intervention in the battle against obesity. The benefits of living an active lifestyle have been well documented. Adults who are physically active on a regular basis are at reduced risk for morbidity and mortality (61). Physical activity is also an important lifestyle component for children. Children who showed higher levels of moderate to intense levels of physical activity showed fewer risk factors for developing cardiovascular disease (62). Physical activity patterns developed in youth may persist into adolescence and adulthood (63, 64), therefore also correlating to activity-related instances of morbidity as adults (61). A major finding in a study by Pahkala et al. (2010), examining physical activity levels of adolescents since two years of age, found that girls who had low physical activity levels at age 13 were noticeably more overweight compared to their more physically active peers (63).

The activity levels of adult role models, especially parents, have been strongly

reflective in children's physical activity levels (65), with the trend of children of active parents being more active than children of sedentary parents (4). This trend is especially evident in the mother-daughter relationship, with overweight mothers more often having sedentary adolescent daughters (63). Explanations for this occurrence include child modeling of parental lifestyle habits, parents supporting the physical activity of the child, and being submersed in an environment conducive to physical activity (4). According to the research findings of Kalakanis et al. (2001), physical activity levels of parents were the strongest predictor of their child's activity level; even more so than variables such as age, gender, and socioeconomic status.

Culinary Skills

A final component of interest in developing a well-rounded nutrition education program, though often overlooked, is teaching about culinary skills. Food preparation skills are essential to prepare healthy and tasty meals that meet dietary recommendations. Although most people are proficient in reading the ingredients to a recipe, they may not know what the ingredients are or are not able to perform basic food preparation techniques (66). Inadequacy in preparing food can limit the types of foods consumed, hindering overall dietary quality (67). The current status of the American food economy contains many fast food, ready-prepared meals, and processed snack foods; these foods tending to be low in nutrient-density (67). The cultural food shifts have undermined the necessity for developing culinary skills. Studies have shown that hands-on cooking activities are successful in improving eating habits, because this type of program allows participants to "take away knowledge and something tangible" (68), a possible incentive for participation. Adolescents who had a hand in food preparation subsequently

consumed more fruits and vegetables and had lower fat intake (69).

Summary

The iCook 4-H program reaches out to families to educate about the importance of family meal times, physical activity, and the development of culinary skills. Family meal times are necessary for bonding and to create structure and purpose in the eating environment. The current lone eating epidemic is sweeping the nation, as families do not make a priority to sync feedings causing highly unstructured meal times (3). Since dining is such a social practice, and meals are becoming more of a single-person affair, the absence of social bonds formulated while dining together causes eating to lose significance. Physical activity is an important lifestyle intervention in combating obesity. Both adults and children that stay physically active on a daily basis are at reduced risk for health-related ailments (4). Emphasis on physical activity for youth is necessary because patterns of physical activity developed in youth persist into adulthood (64), therefore also decreasing instances of inactivity-related morbidity as adults (61). Many individuals are deficient in the cooking skills needed to perform basic food preparation tasks (66), which put limitations on the types of foods consumed and impacts dietary quality (67). Based on previous research findings, the main emphases of the iCook 4-H program are incumbent foci of a nutrition education program.

The literature review evaluated family-centered programs to promote child weight loss or general healthy living. Some of the program components that yielded desirable results included heavy parental involvement, restructuring the home environment if there were deficits in reaching health goals, self-monitoring, goal setting, focusing on the type

and amounts of food consumed, and having an awareness of potential barriers to achievement (23). Other predictors of success included parents participating in their own weight loss efforts (21, 22) and children having parents with authoritative feeding styles (33, 34, 35). Components of nutrition education programs that prompted less than desirable results included entering the program as an older child, having a depressed or avoidant attached mother, having parents with authoritarian or permissive feeding styles (29, 31), parents "blind" to unhealthy weight status in both themselves and their children (38, 57), parents exhibiting high levels of dietary restraint and dis-inhibition (36), and the presence of other obese family members (27, 38). By having background knowledge on these success and failure predictors, health and wellness educators will be better able to design their programs for success.

A major theme of nutrition education programs involving families and parental involvement is learning how to behave through observational learning. Imitating models is a direct reflection of Bandura's (1977) Social Learning Theory in action (17). Families help shape each other's overall lifestyle patterns by influencing food choices, activity behaviors (13) and through promoting positive family meal practices (16).

Justification

Family-centered nutrition programs, where parents and children attend education sessions together, may be beneficial interventions to improve health outcomes of children. The family is a social institution that includes many influencing networks and relationships. Within this institution, feeding is a social practice that reinforces the concept of family (70). Other practices related to nutrition and health, including

developing cooking skills, choosing healthy options to prepare for meals, and the prevalence of physical activity, are also heavily influenced by the family unit; a reason why family interventions may be effective in preventing/reducing childhood overweight/obesity. However, despite the vast amount of literature on family-centered nutrition education programs designed to prevent childhood obesity, there is very little data specifically focusing on how familial support impacts the health status and food-related behaviors of the adult meal-providers also attending the education sessions with their children. The goal of this study was to gain an understanding on whether completing the education program together as a meal-provider/child pair will positively impact the health outcomes, knowledge, and food-related behaviors of the accompanying adults, and identify factors contributing to success. This view goes a step beyond family-centered interventions, with the intent of lessening instances of childhood overweight/obesity, because we will be focusing on how family-centered interventions may benefit the family as a whole, in regards to positive health outcomes, by also including parental measurements.

CHAPTER 3
METHODOLOGY

Goal and Objectives

The primary goal of this study was to gain an understanding on whether completing the education program together as a meal-provider/child pair will positively impact the habits and knowledge of the accompanying adults. The objectives of this researcher were to assess self-reported food intake, food procurement and preparation practices, food safety, parent-child feeding relationships, family mealtime routines, quality of life, and height and weight, of adults who are the main preparers of food in the home for the 9-10 year old children at pre and post assessment.

Hypotheses

The adult primary meal preparer will improve from pre to post assessment:

- Food intake, based on a series of screeners, including the National Cancer Institute food screeners
- Kitchen proficiency based on the Cooperative Extension Behavior Checklist
- The parent-child feeding relationship, based on the Birch Child Feeding Questionnaire
- Family meal time routine, based on the Family Meal Time Routine instrument
- Recommended mealtime, cooking, shopping, and exercise practices based on the Program Evaluation Survey
- Quality of life based on the CDC Quality of Life Survey

This study was a 4-month pilot test for a childhood obesity prevention intervention study. Family dyads (n=54) participated and the focus for this study was on

the adult, who is the main preparer of food in the home for the child. The design was a one-group, pre-, post- assessment study across five states, Maine, Nebraska, South Dakota, Tennessee and West Virginia. The researchers at these state universities are part of a multi-state group who received a USDA grant, the Agriculture and Food Research Initiative Grant 2012-68001-19605 from the National Institute of Food and Agriculture, Childhood Obesity Prevention: Integrated Research, Education, and Extension to Prevent Childhood Obesity—A2101.

In each state, dyads were recruited to participate in a 6-session educational program designed to improve culinary skills, physical activity, and family mealtime and play time interaction. Sessions were conducted every other week for a total of 12 weeks. In Nebraska, the sessions occurred at Community Centers in the Eastern part of the state (North Omaha) and the Western part of the state (Scottsbluff).

At each assessment period, the adult completed an online survey. Also, the adult assisted the child with his/her food intake and physical activity screeners, as needed. The surveys took about 20 minutes/person. The child had additional physical assessments, so the total time for the child was 40 minutes. The incentive was $100 per dyad, distributed as $10 cash for both adult and child at pre and post assessments ($40), and $60 cash for the adults, distributed in $10 increments at each of the six educational sessions. Participants had to attend the sessions to receive monetary incentives. The child also received an incentive of a video camera. All researchers received training in human subjects research. All methods were approved by the Human Subjects Institutional Review Board (IRB) for each participating state.

In each state a student researcher was designated as the Campus Coordinator. This person was the primary contact for the super coordinator, Douglas Mathews (douglas.mathews@umit.maine.edu), and also communicated with campus coordinators across states as needed. The responsibilities of the campus coordinator included:

- Know recruitment procedures and manage participant recruitment (Appendix A).
- Know the study protocols, including campus coordinator protocols (in Appendices A-I).
    - Review the Study Manual and IRB Applications which are separate documents
- Set assessment appointments (use the Script for Campus Coordinators and the Participant Contact and Appointment Sheet, Appendix B).
    - Pre assessment was the week of August 20, 2012. Post assessment was the week of November 12, 2012.
- Manage participant assessments (Appendix C). Oversee and/or conduct assessments, using the Data Collection Form (Appendix D).
- Enter data from the Data Collection Form (Appendix D) into the participant database immediately following assessments. (http: www.icook4h.com)
- Assign another person to verify participant data in database.
- Contact all participants who miss assessment appointment to reschedule, using script in Appendix D.
- Monitor website activity and contact participants who become inactive, using the Website Inactivity Messages in Appendix E. Children were considered inactive

who do not upload videos on a weekly basis or accessed the website weekly. Adult inactivity was addressed by the session leaders.

Participants

Adults who were the main food preparers for the child are the study population. Convenience sampling was used following the eligibility criteria:

- Primary adult meal preparer, ≥ 19 years old
- Able to participate in a program from August through November, 2012
- Free from life-threatening illness or other conditions and/or activity-related medical restrictions that would prevent participation in a face-to-face nutrition and fitness program
- Regular access to computer with Internet connection

Recruitment Methods

Family dyads consisting of youth (9-10 years old) and their primary adult food preparers were recruited in five states to participate in the 12-week iCook 4-H program pilot test. Researchers in the five participating iCook 4-H states formed partnerships with Extension leaders to assist in recruitment efforts.

Nutrition Educators and/or paraprofessionals who were on the state iCook 4-H teams were the primary recruiters, using their usual mechanisms for recruiting participants into their programs. Making contacts with 4-H programs, if they were not directly involved with those programs, was the number one method for recruitment, so that children who were typically part of 4-H programming were invited to participate in iCook 4-H and/or share the information with their friends who were not typically part of

4-H programs. Extension staff either talked directly to adults or sent flyers home with children with contact information for the adults.

In Nebraska, a respected community member was hired to recruit families. Other recruitment methods included food banks, Extension programs, and schools (71). Barriers to recruitment included competition with recruiting the same age group, timing conflicts with other activities, and parents thinking it was an after school program with little or no commitment of time involved (71).

Recruiters made personal contact with adult potential participants and got a preliminary commitment, including names and contact information, using the Recruitment Information Form, in Appendix A. This form was given/emailed to their state campus coordinator who followed up with a phone call to detail the project, get initial consent to participate in the project, and make appointments for assessments by using protocols and scripts in Appendix B. On the day of assessments, researchers reviewed the consent and assent forms (Appendix F) with the potential participants and had the adult sign the consent form along with receiving the assent of the child to participate. At that point, the child and adult were considered participants.

After recruitment, participants completed an online recruitment process survey to report how they learned about the iCook 4-H program. Across the five states, 38% heard about the research study from 4-H Program/Cooperative Extension leaders, 24% from a friend or family member, 19% from school mailings, 5% from researchers, 2% from flyers, and 12% through other avenues (72).

Educational Program

The educational program for family dyads was a non-diet approach to weight management for children, using the Social Cognitive Theory (SCT) as the theoretical framework. It was designed as six in-person, 2-hour classes occurring every other week between September and November, 2012. The classes were designed by researchers and Extension staff who are part of the iCook 4-H project. Each lesson followed an instructional format for consistency with emphasis on culinary skills, physical activities, nutrition focus, and family mealtime and playtime engagement. Reciprocal role modeling between child and adult and between session leader and dyads to build skills and self-efficacy occurred during the sessions and at home. The 4-H curricula, *Fast Foods* and *Youth in Motion* both developed in Nebraska, were modified for use for the educational program. Modifications included additional focus on MyPlate, food safety, and utilizing technology (cameras, making and editing videos, and the iCook website) (73).

To add interest and enthusiasm, children were given a video camera to create and share, on a secure study website, short clips they developed at home to demonstrate their learning around cooking, physical activity and family meals. The website, developed by another iCook 4-H researcher, was designed specifically for the study in an interactive format to provide a community for information sharing and chatting. Children were able to set nutrition and physical activy goals and track progress.

Data Collection Instruments

The instruments listed below (Appendix G-H) were used to identify food intake and food-related behavior. The instruments were hosted on secure servers with Qualtrics,

an online survey software (Qualtrics, Provo, UT). The surveys were pre-tested prior to administration by the researchers. Primary investigators (PIs) from each of the five states gave input on the program outcome, process, and fidelity testing. Additionally, overarching questions and themes were discussed with Extension partners in the five different states, which prompted rewording of some questions to ensure validity and ability to be understood by the target population. An expert question review focusing on the set-up of the surveys and the organization of the likert scales was conducted by Dr. Dahl, from the University of Florida, and Dr. St. John, from the University of Maine. Fidelity of Implementation instruments were developed following a framework form measuring fidelity designed by Century, Rudnick, and Freeman (2010) (74).

Food Intake (Appendix G). Food intake was assessed using 1) the Health Belief subscale of the Healthier Food Outcomes and was used to assess the Social Cognitive Theory construct of outcome expectations (75). 2) The National Cancer Institute's (NCI) Quick Food Scan for fat intake (76) by assessing eating habits over the past 12 months; 3) NCI Fruit and Vegetable Screener to assess intake over the last month (77).

EFNEP Behavior Checklist (Appendix H). A 10-item checklist (78) designed for use in the Expanded Food and Nutrition Education Program was used to assess food handling practices, food preparation skills, and mastery of living situation/self-esteem. It is currently part of the Evaluation/Reporting System software for EFNEP and has been assessed to have a 6^{th} grade reading level.

Birch Child Feeding Questionnaire (Appendix I)**.** Attitudes, beliefs and practices about child feeding and obesity proneness were assessed with the 28-item questionnaire developed by Birch (79).

Family Meal Routine (Appendix J)**.** Characteristics of family meal times was assessed with 7-items from Project Eat. It has previously been conducted with the primary meal preparers of 8-10 year olds (80).

Program Outcome Evaluation (Appendix K)**.** Participants were asked 17 questions specifically related to curriculum material pre and post pilot to assess program outcomes and effectiveness.

CDC Quality of Life (Appendix L)**.** Quality of life was assessed by a 13-item checklist developed by the Centers for Disease Control.

Demographic Questions (Appendix M). Adult participants were asked age, gender, ethnicity, marital status, age(s) of children for whom they prepare meals, and height and weight. They were asked to indicate whether they currently use any of a list of agencies providing support for low-income (up to 185% of poverty), such as the Women, Infants and Children Program (WIC), Head Start, Temporary Assistance for Needy Families (TANF), or Supplemental Nutrition Assistance Program (SNAP-Food Stamps).

Data Analyses.

Descriptive statistics are presented for each variable for pre and post data. The Shapiro-Wilk test was used to test distribution normality. Data that were not normally distributed were compared using a nonparametric, 2–related samples test with a Wilcoxon signed-rank test with analyses tested at $P < 0.05$. Normally distributed data was compared using a parametric, paired samples T test with a level of significance set at $P < 0.05$. The consulting statistician was Christa Ice from West Virginia University.

CHAPTER 4
RESULTS

Demographics

The breakdown of participants by state were approximately 17% from Tennessee, 19% from West Virginia, 21% from Maine, 21% from Nebraska, and 23% from South Dakota (Table 1). Eighty-two percent were female and 18% were male. Participants' ages ranged from 27-54 years (mean age = 38.3 ± 5.8 years). The racial breakdown of the sample was White (53.2%), Black (10.6%), Hispanic (17%), Native American (17%), and Other (2.1%). The participants had 3 ± 1.4 children, ranging from 1 to 7 children (Table 1). Regarding marital status, the majority of participants were married (66%), divorced (13%), or single (13%). Most participants had either completed a bachelor's degree (31.3%) or some college (29.2 %). The majority were not enrolled in food assistance programs (70%), with the remaining 30% enrolled in Aid to Dependent Children/Temporary Assistance for Needy Families (TANF), Expanded Food and Nutrition Education Program (EFNEP), free/reduced price school meals, Medicaid, welfare-to-work, Women, Infants, and Children (WIC), Supplemental Nutrition Assistance Programs (SNAP), or supplemental security income. Most households contained two adults (71%) and two children (50%) (Table 1). There were no significant changes in participant BMI from baseline to post-intervention. At baseline, average participant BMI was 30.15 ± 7.20, and at post-intervention 30.21 ± 7.16 (not reported in the table).

Cooperative Extension Behavioral Checklist

Post intervention, participants significantly improved meal planning ($p = 0.007$), including a borderline significant finding of prioritizing healthy meal choices for their families ($p = 0.050$), and using the 'Nutrition Facts' on the food label to make food choices ($p = 0.015$) (Table 2). Fewer participants reported never running out of food at the end of the month, improving from 18% at baseline to 31% at post-intervention. There was a 9% improvement of those who almost always shopped with a grocery list, starting at 28% at baseline, and improving to 37% at post-intervention. An area that did not show significant improvement was preparing food without salt, with only a 2% improvement of those who never added salt from baseline to post-intervention (18% to 20%) (Table 2).

Family Meals

At the conclusion of the intervention, families reported purchasing a significantly lower amount of meals from fast-food restaurants ($p =0.033$). There was an 18% decrease of fast food meals purchased 1-2 days per week (76% to 52%) and a 24% increase in those who never purchased a meal from a fast food restaurant (16% to 40%) (Table 3). Participants also purchased fewer meals from full-service/sit-down restaurants, starting at 50% of meals purchased 1-2 times per week at pre-intervention, to 37% purchased 1-2 times per week at post-intervention. Sixty percent of respondents reported never purchasing a meal from a full-service/sit-down restaurant, a 14% increase from baseline. No changes were observed in regards to family meal attendance, with mean attendance of all family members at dinner being $4 \pm .99$ days a week, and mean attendance of all family members at breakfast at 2.62 ± 1.1 days a week (Table 3).

National Cancer Institute Food Screener

There were some improvements in eating habits based on food screener scale responses. A food item that significantly decreased in consumption was cheese or cheese spread (regular fat), decreasing from 10% once per day at baseline, to only 2% after the intervention ($p = 0.024$) (Table 4). There were significant, positive frequency patterns of 100% fruit juice consumption from pre to post, with 4% of the participants consuming 100% juice 1-3 times per day at baseline, and increasing to 16.3% consumption per day at post-intervention ($p = 0.012$) (Table 4). Fruit, vegetable-based soups, and whole grain consumption also increased after the program. Forty percent reported eating fruit 1-4 times per day at baseline, to 60% post-intervention (Table 4). Participants consumed significantly more vegetable-based soups, such as tomato soup, gazpacho, beef with vegetable soup, and minestrone, post-intervention, increasing from 6% consuming soup 3-6 times per week, to 19% at post-intervention ($p < 0.0001$) (Table 4). Participants significantly increased their whole grain consumption, increasing from a mean of 2.71 cups per day at baseline to 3.49 cups per day at post-intervention ($p = 0.009$). There were little observed changes in cereal, milk, egg, breakfast meat (bacon, sausage), and butter or margarine consumption (Table 4).

Program Outcome Evaluation

After completing the iCook intervention, participants were significantly more likely to shop with a grocery list ($p = 0.045$). Weekly meal planning increased from baseline with 74% of participants sometimes to always planning weekly meals to 83% post-intervention (Table 5). Post intervention, adults reported that youth were

significantly more likely to help cook family meals, with 96% sometimes to most of the time assisting in meal preparation, compared to 63% at baseline ($p < 0.0001$) (Table 5). After the iCook sessions, participants expressed a significant preference for cooking at home rather than dining out at restaurants ($p = 0.015$). At baseline, 23% mostly to almost always expressed a desire to dine outside of the home rather than cooking at home, compared to only 4% post intervention (Table 5). Adults reported more confidence in their cooking skills post-intervention, with 86% mostly to almost always feeling confident in their cooking skills, compared with 75% at baseline ($p = 0.015$) (Table 5). Families significantly ate more meals together after completing the iCook 4-H sessions, with 75% mostly to always eating weekly meals together at baseline, improving to 92% post-intervention ($p = 0.007$) (Table 5). Post-intervention, topics of conversation tended to include all family members during meals 49% of the time, a significant improvement from 35% at baseline ($p = 0.034$) (Table 5). Adults reported that youth were significantly more active post-intervention, with a 16% increase (57% to 73%) in mostly to almost always achieving 60 minutes of physical activity on a daily basis ($p = 0.026$) (Table 5).

Areas that showed little to no improvement were managing the grocery budget carefully to ensure balanced meals for the family and actively playing together as a family (3.21 ± 0.81 to 3.28 ± 0.74). There was a reported decrease of those who always managed the budget to ensure healthy family meals from baseline to post-intervention (33% to 23%).

Birch Child Feeding Questionnaire

Post intervention, adults significantly decreased their control on their child's sweets intake, with 48% always exerting control at baseline, to 22% at post-intervention ($p = 0.029$) (Table 6). There was also a significant decrease in offering sweets as rewards for a child's good behavior, with 65% either slightly disagreeing or disagreeing at baseline, to 78% at post-intervention ($p = 0025$). Post-intervention there was a notable decrease in parental control for child's fat intake ($p = 0.003$). Adults reported significantly decreasing offering food as a reward in general, with 46% disagreeing with offering their children their favorite foods as rewards at baseline, and increasing to 57% in disagreement post-intervention ($p = 0.023$) (Table 6). Parents exhibited less control in regulating their child's junk food intake at program conclusion, with 30% reporting at baseline that they slightly to always disagreed to the statement, "If I did not regulate my child's eating, he/she would eat too many junk foods," compared to 34% post-intervention ($p = 0.033$) (Table 6).

CDC Quality of Life

There were no reported significant quality of life changes from pre to post-intervention, including those related to overall health, prevalence of physical illness and injury, mental health, and whether or not physical or mental health kept participants from completing routine activities (Table 7). The average number of days during the past 30 days in which physical health was not good was 3.16 days ± 7.334 (2.98 ± 7.541 at baseline and 3.33 ± 7.128 at post-intervention). The average number of days in the past 30 days mental health was not good was 3.7 days ± 5.759 (4.23 ± 5.904 at baseline and

3.16 ± 5.614 post-intervention). The average amount of days during the past 30 days that pain made it difficult for completion of usual activities, such as self-care, work, or recreation was 2.4 days ± 6.28 (2.06 ± 6.166 at baseline and 2.67 ± 5.949 post-intervention). During the past 30 days, participants reported they were sad, blue, and depressed for 2.2 days ± 3.632 (2.33 ± 3.738 at baseline and 2.10 ± 3.525 post-intervention) and worried tense or anxious for 6.06 days ± 7.032. Participants reported being healthy and full of energy for 15.6 days ± 9.767 during the past 30 days (15.09 ± 9.634 at baseline and 16.18 ± 9.899 at post-intervention).

Table 1: Demographics

Questions	Responses n (%)
Gender	
Female	44 (82)
Male	10 (18)
What state do you live in?[!]	
Maine	10 (20.8)
South Dakota	11 (22.9)
Tennessee	8 (16.7)
West Virginia	9 (18.8)
Nebraska	10 (20.8)
What is your age in years?	
Range	27-54
Mean ± SD	38.31 ± 5.842[!]
How many children do you have?	
Mean ± SD	3.04 ± 1.543[!]
What is your current marital status? [!]	
Married	31 (66.0)
Divorced	6 (12.8)
Single	6 (12.8)
In a committed relationship	4 (8.4)
What is the highest education level you have	

completed?	
Elementary School	1 (2.1)
High School	7 (14.6)
Some College	14 (29.2)
Associates Degree	5 (10.4)
Bachelor's Degree	15 (31.3)
Graduate Degree	5 (10.4)
Doctoral Degree	1 (2.1)
Mean ± SD	4.92 ± 1.471[!]
What is your primary race? [@]	
White	25 (53.2)
Black	5 (10.6)
Hispanic	8 (17.0)
Native American	8 (17.0)
Other	1(2.1)
Do you or any members of your family participate in any of the following? Aid to dependent children/TANF, EFNEP, Free/Reduced price school meals, Medicaid, welfare-to-work, WIC, SNAP, Supplemental security income?[#]	
Yes	14 (30.4)
No	32 (69.6)
Including yourself, how many total people live in your house? How many adults?	
Mean ± SD	1.94 ± .598[!]
Including yourself, how many total people live in your house? How many children?	
Mean ± SD	2.69 ± 1.432[!]
[!]Missing n=6 [@]Missing n=7 [#]Missing n=8	

Table 2: Cooperative Extension Behavior Checklist

Questions	**Responses n (%)**	
How often do you plan meals ahead of time?	**Pre**	**Post**
Do Not Do	1(2.0)	0
Seldom	7 (14.0)	1 (2.0)
Sometimes	17 (34.0)	17 (34.7)

Most of the Time	17 (34.0)	22 (44.9)
Almost Always	8 (16.0)	9 (18.4)
Mean ± SD	3.48 ± .995[†a]	3.80 ± .763[‡b]
How often do you run out of food by the end of the month?		
Do Not Do	9 (18.0)	15 (30.6)
Seldom	16 (32.0)	9 (18.4)
Sometimes	13 (26.0)	12 (24.5)
Most of the Time	6 (12.0)	10 (20.4)
Almost Always	6 (12.0)	3 (5.6)
Mean ± SD	2.68 ± 1.253[†a]	2.30 ± 1.436[‡a]
How often do you shop with a grocery list?		
Do Not Do	1 (2.0)	0
Seldom	5 (10.0)	3 (6.1)
Sometimes	10 (20.0)	14 (28.6)
Most of the Time	19 (38.0)	14 (28.6)
Almost Always	14 (28.0)	18 (36.7)
Mean ± SD	3.86 ± 1.069[†a]	3.96 ± .957[‡a]
How often do you compare prices before you buy food?		
Do Not Do	0	0
Seldom	3 (6.0)	0
Sometimes	10 (20.0)	12 (24.5)
Most of the Time	10 (20.0)	13 (26.5)
Almost Always	27 (54.0)	24 (49.0)
Mean ± SD	4.22 ± .975[†a]	4.24 ± .830[‡a]
This question is about meat and dairy foods. How often do you let these foods sit out for more than two hours?		
Do Not Do	32 (64.0)	33 (67.3)
Seldom	11 (22.0)	12 (24.5)
Sometimes	5 (10.0)	3 (6.1)
Most of the Time	2 (4.0)	1 (2.0)
Almost Always	0	0
Mean ± SD	1.58 ± .971[†a]	1.43 ± .707[‡a]
How often do you thaw food at room temperature?		
Do Not Do	12 (24.0)	17 (34.7)
Seldom	13 (26.0)	12 (24.5)
Sometimes	13 (26.0)	14 (28.6)

Most of the Time	5 (10.0)	5 (10.2)
Almost Always	7 (14.0)	1 (2.0)
Mean ± SD	2.64 ± 1.336[†a]	2.20 ± 1.099[‡a]
When deciding how much to feed your family, how often do you think of healthy food choices?		
Do Not Do	0	0
Seldom	2 (4.0)	1 (2.0)
Sometimes	13 (26.0)	6 (12.2)
Most of the Time	23 (46.0)	27 (55.1)
Almost Always	12 (24.0)	15 (30.6)
Mean ± SD	3.90 ± .814[†a]	4.14 ± .707[‡b]
How often have you prepared food without adding salt?		
Do Not Do	3 (6.0)	4 (8.2)
Seldom	11 (22.0)	9 (18.4)
Sometimes	13 (26.0)	16 (32.7)
Most of the Time	14 (28.0)	10 (20.4)
Almost Always	9 (18.0)	10 (20.4)
Mean ± SD	3.30 ± 1.182[†a]	2.27 ± 1.221[‡a]
How often did you use the 'Nutrition Facts' on the food label to make food choices?		
Do Not Do	5 (10.0)	2 (4.1)
Seldom	13 (26.0)	3 (6.1)
Sometimes	14 (28.0)	19 (38.8)
Most of the Time	12 (24.0)	19 (38.8)
Almost Always	6 (12.0)	6 (12.2)
Mean ± SD	3.02 ± 1.186[†a]	3.49 ± .938[‡b]
How often do your children eat something in the morning within two hours of waking up?		
Do Not Do	0	0
Seldom	1 (2.0)	2 (4.3)
Sometimes	7 (14.0)	0
Most of the Time	12 (24.0)	10 (21.7)
Almost Always	30 (60.0)	34 (73.9)
Mean ± SD	4.42 ± .810[†a]	4.65 ± .706[#a]

[a-b] Non-parametric, 2-related samples test, and parametric, paired samples t-test with means significantly different at $p < 0.05$ level.
[†]Missing n=4
[‡]Missing n=5
[#]Missing n=5

Table 3: Family Meals

Questions	Responses n (%)	
Did all, or most of your family living in your home eat dinner or supper (evening meal) together?	**Pre**	**Post**
Never	0	1 (2.0)
1-2 days	5 (10.0)	4 (8.2)
3-4 days	14 (28.0)	12 (24.5)
5-6 days	17 (34.0)	18 (36.7)
7 days	14 (28.0)	14 (28.6)
Mean ± SD	3.80 ± .969[†a]	3.82± 1.014[‡a]
Did all, or most of your family living in your home eat breakfast together?		
Never	6 (12.0)	5 (10.2)
1-2 days	23 (46.0)	24 (49.0)
3-4 days	9 (18.0)	9 (18.4)
5-6 days	8 (16.0)	6 (12.2)
7 days	4 (8.0)	5 (10.2)
Mean ± SD	2.62 ± 1.141[†a]	2.63 ± 1.149[‡a]
Was at least one parent present when your child ate his/her evening meal?		
Never	0	0
1-2 days	1 (2.0)	0
3-4 days	6 (12.0)	5 (10.2)
5-6 days	8 (16.0)	12 (24.5)
7 days	35 (70.0)	32 (65.3)
Mean ± SD	4.54 ± .788[†a]	4.55 ± .679[‡a]
Was a family evening meal purchased from a fast-food restaurant, and eaten either at the restaurant or at home?		
Never	8 (16.0)	19 (39.6)
1-2 days	38 (76.0)	26 (54.2)
3-4 days	3 (6.0)	3 (6.3)
5-6 days	1 (2.0)	0
7 days	0	0
Mean ± SD	1.94 ± .550[†a]	1.67 ± .595[!b]
Was a family meal purchased and eaten in other types of restaurants (full-service, sit-down)?		
Never	23 (46.0)	29 (59.2)
1-2 days	25 (50.0)	18 (36.7)
3-4 days	0	2 (4.1)

5-6 days	2 (4.0)	0
7 days	0	0
Mean ± SD	1.62 ± .697[†a]	1.45 ± .580[‡a]
Was a family evening meal delivered to your home (pizza, sandwiches)?		
Never	40 (80.0)	42 (85.7)
1-2 days	9 (18.0)	7 (14.3)
3-4 days	0	0
5-6 days	1 (2.0)	0
7 days	0	0
Mean ± SD	1.24 ± .555[†a]	1.14 ± .354[‡a]
Was a family evening meal picked up as takeout food?		
Never	26 (52.0)	30 (61.2)
1-2 days	22 (44.0)	18 (36.7)
3-4 days	1 (2.0)	1 (2.0)
5-6 days	1 (2.0)	0
7 days	0	0
Mean ± SD	1.54 ± .646[†a]	1.41 ± .537[‡a]
[a-b] Non-parametric, 2-related samples test, and parametric, paired samples t-test with means significantly different at $p < 0.05$ level. [†]Missing n=4 [‡]Missing n=5 [!]Missing n=6		

Table 4: NCI Food Screener

Questions	Responses n (%)	
Cold cereal	**Pre**	**Post**
Never	5 (10.2)	4 (8.2)
Less than once per month	4 (8.2)	4 (8.2)
1-3 times per month	7 (14.3)	12 (24.5)
1-2 times per week	14 (28.6)	7 (14.3)
3-4 times per week	10 (20.4)	14 (28.6)
5-6 times per week	5 (10.2)	4 (8.2)
1 time per day	3 (6.1)	4 (8.2)
2 or more times per day	1 (2.0)	0
Mean ± SD	4.06 ± 1.713[‡a]	4.04 ± 1.645[‡a]
Skim milk, on cereal or to drink		
Never	15 (30.0)	17 (34.7)

Less than once per month	3 (6.0)	2 (4.1)
1-3 times per month	4 (8.0)	4 (8.2)
1-2 times per week	4 (8.0)	2 (4.1)
3-4 times per week	5 (10.0)	9 (18.4)
5-6 times per week	10 (20.0)	4 (8.2)
1 time per day	7 (14.0)	8 (16.3)
2 or more times per day	2 (4.0)	3 (6.1)
Mean ± SD	3.98 ± 2.437[†a]	3.88 ± 2.538[‡a]
Eggs, fried or scrambled, in margarine, butter, or oil		
Never	7 (14.3)	6 (12.2)
Less than once per month	6 (12.2)	7 (14.3)
1-3 times per month	19 (38.8)	15 (30.6)
1-2 times per week	8 (16.3)	14 (28.6)
3-4 times per week	4 (8.2)	3 (6.1)
5-6 times per week	2 (4.1)	2 (4.1)
1 time per day	2 (4.1)	1 (2.0)
2 or more times per day	1 (2.0)	1 (2.0)
Mean ± SD	3.31 ± 1.636[‡a]	3.33 ± 1.519[‡a]
Sausage or bacon, regular fat		
Never	8 (16.0)	6 (12.2)
Less than once per month	12 (24.0)	11 (22.4)
1-3 times per month	18 (36.0)	23 (46.9)
1-2 times per week	8 (16.0)	6 (12.2)
3-4 times per week	1 (2.0)	1 (2.0)
5-6 times per week	1 (2.0)	1 (2.0)
1 time per day	1 (2.0)	1(2.0)
2 or more times per day	1 (2.0)	0
Mean ± SD	2.88 ± 1.466[†a]	2.84 ± 1.196[‡a]
Margarine or butter on bread, rolls, pancakes		
Never	4 (8.0)	2 (4.1)
Less than once per month	6 (12.0)	5 (10.2)
1-3 times per month	16 (32.0)	19 (38.8)
1-2 times per week	8 (16.0)	13 (26.5)
3-4 times per week	8 (16.0)	4 (8.2)
5-6 times per week	3 (6.0)	1 (2.0)
1 time per day	2 (4.0)	3 (6.1)

2 or more times per day	3 (6.0)	2 (4.1)
Mean ± SD	3.84 ± 1.811[†a]	3.76 ± 1.588[‡a]
Orange juice or grapefruit juice		
Never	6 (12.0)	6 (10.4)
Less than once per month	10 (20.0)	9 (18.8)
1-3 times per month	17 (34.0)	12 (25.0)
1-2 times per week	8 (16.0)	12 (25.0)
3-4 times per week	5 (10.0)	8 (16.7)
5-6 times per week	2 (4.0)	1 (2.1)
1 time per day	1 (2.0)	1 (2.1)
2 or more times per day	1 (2.0)	0
Mean ± SD	3.22 ± 1.556[†a]	3.33 ± 1.404[!a]
Fruit (not juices)		
Never	0	1 (2.0)
Less than once per month	2 (4.0)	1 (2.0)
1-3 times per month	4 (8.0)	8 (16.3)
1-2 times per week	8 (16.0)	7 (14.3)
3-4 times per week	12 (24.0)	5 (10.2)
5-6 times per week	7 (14.0)	11 (22.4)
1 time per day	9 (18.0)	9 (18.4)
2 or more times per day	8 (16.0)	7 (14.3)
Mean ± SD	5.54 ± 1.705[†a]	5.41 ± 1.859[‡a]
Beef or pork hot dogs, regular fat		
Never	5 (10.0)	9 (18.4)
Less than once per month	15 (30.0)	13 (26.5)
1-3 times per month	16 (32.0)	16 (32.7)
1-2 times per week	8 (16.0)	8 (16.3)
3-4 times per week	4 (8.0)	3 (6.1)
5-6 times per week	0	0
1 time per day	1 (2.0)	0
2 or more times per day	1 (2.0)	0
Mean ± SD	3.00 ± 1.429[†a]	2.65 ± 1.147[‡a]
Cheese or cheese spread, regular fat		
Never	1 (2.0)	1 (2.1)
Less than once per month	0	1 (2.1)

1-3 times per month	8 (16.0)	10 (20.8)
1-2 times per week	10 (20.0)	14 (29.2)
3-4 times per week	18 (36.0)	15 (31.3)
5-6 times per week	6 (12.0)	4 (8.3)
1 time per day	5 (10.0)	1 (2.1)
2 or more times per day	2 (4.0)	2 (4.2)
Mean ± SD	4.84 ± 1.434[†a]	4.40 ± 1.364[¦b]
French fries, home fries, or hash potatoes		
Never	2 (4.0)	2 (4.1)
Less than once per month	6 (12.0)	10 (20.4)
1-3 times per month	25 (50.0)	21 (42.9)
1-2 times per week	10 (20.0)	12 (24.5)
3-4 times per week	2 (4.0)	3 (6.1)
5-6 times per week	2 (4.0)	1 (2.0)
1 time per day	2 (4.0)	0
2 or more times per day	1 (2.0)	0
Mean ± SD	3.46 ±1.403[†a]	3.14 ± 1.021[‡a]
Margarine or butter on vegetables, including potatoes		
Never	5 (10.0)	5 (10.2)
Less than once per month	7 (14.0)	2 (4.1)
1-3 times per month	8 (16.0)	16 (32.7)
1-2 times per week	13 (26.0)	16 (32.7)
3-4 times per week	10 (20.0)	5 (10.2)
5-6 times per week	3 (6.0)	3 (6.1)
1 time per day	2 (4.0)	2 (4.1)
2 or more times per day	2 (4.0)	0
Mean ± SD	3.86 ±1.761[†a]	3.63 ± 1.424[‡a]
Mayonnaise, regular fat		
Never	15 (30.0)	14 (28.6)
Less than once per month	8 (16.0)	11 (22.4)
1-3 times per month	13 (26.0)	17 (34.7)
1-2 times per week	7 (14.0)	5 (10.2)
3-4 times per week	4 (8.0)	2 (4.1)
5-6 times per week	0	0
1 time per day	2 (4.0)	0
2 or more times per day	1 (2.0)	0

Mean ± SD	2.80 ± 1.726[†a]	2.39 ± 1.133[‡a]
Salad dressing, regular fat		
Never	5 (10.0)	7 (14.3)
Less than once per month	8 (16.0)	9 (18.4)
1-3 times per month	17 (34.0)	14 (28.6)
1-2 times per week	11 (22.0)	12 (24.5)
3-4 times per week	4 (8.0)	4 (8.2)
5-6 times per week	2 (4.0)	1 (2.0)
1 time per day	2 (4.0)	2 (4.1)
2 or more times per day	1 (2.0)	0
Mean ± SD	3.40 ± 1.578[†a]	3.16 ± 1.477[‡a]
Rice		
Never	2 (4.0)	1 (2.0)
Less than once per month	4 (8.0)	2 (4.1)
1-3 times per month	18 (36.0)	11 (22.4)
1-2 times per week	13 (26.0)	24 (49.0)
3-4 times per week	4 (8.0)	4 (8.2)
5-6 times per week	6 (12.0)	4 (8.2)
1 time per day	1 (2.0)	2 (4.1)
2 or more times per day	2 (4.0)	1 (2.0)
Mean ± SD	3.90 ± 1.568[†a]	4.08 ± 1.304[‡a]
Margarine, butter, or oil on rice or pasta		
Never	8 (16.0)	12 (24.5)
Less than once per month	10 (20.0)	6 (12.2)
1-3 times per month	12 (24.0)	17 (34.7)
1-2 times per week	10 (20.0)	11 (22.4)
3-4 times per week	6 (12.0)	3 (6.1)
5-6 times per week	2 (4.0)	0
1 time per day	1 (2.0)	0
2 or more times per day	1 (2.0)	0
Mean ± SD	3.22 ± 1.645[†a]	2.73 ± 1.238[‡a]
Over the past 12 months, when you prepared foods with margarine or ate margarine, how often did you use reduced-fat margarine?		
Didn't use margarine	18 (36.0)	18 (36.7)
Almost never	10 (20.0)	11 (22.4)

About 1/4 of the time	5 (10.0)	3 (6.1)
About 1/2 of the time	4 (8.0)	5 (10.2)
About 3/4 of the time	3 (6.0)	2 (4.1)
Almost always or always	10 (20.0)	10 (20.4)
Mean ± SD	2.88 ± 1.955[†a]	2.84 ± 1.962[‡a]
Overall, when you think about the foods you ate over the past 12 months, would you say your diet was high, medium, or low in fat?		
High	9 (18.0)	5 (8.2)
Medium	35 (70.0)	38 (77.6)
Low	6 (12.0)	7 (14.3)
Mean ± SD	1.94 ± .550[†a]	2.06 ± .475[‡a]
Over the last month, how many times per month, week, or day did you drink 100% juice such as orange, apple, grape, or grapefruit juice? Do not count fruit drinks like Kool-Aid, lemonade, Hi-C, cranberry juice drink, Tang, and Twister. Include juice.		
Never	4 (8.2)	3 (6.1)
1-3 times last month	20 (40.8)	21 (42.9)
1-2 times per week	14 (28.6)	8 (16.3)
3-4 times per week	6 (12.2)	6 (12.2)
5-6 times per week	3 (6.1)	3 (6.1)
1 time per day	2 (4.1)	5 (10.2)
2 times per day		2 (4.1)
3 times per day		1 (2.0)
Mean ± SD	2.80 ± 1.207[‡a]	3.27 ± 1.765[‡b]
Each time you drank 100% juice, how much did you drink?		
Less than 3/4 cup (less than 6 ounces)	11 (23.4)	16 (34.8)
3/4 to 1 1/4 cup (6 to 10 ounces)	22 (46.8)	17 (37.0)
1 1/4 to 2 cups	10 (21.3)	12 (26.1)
More than 2 cups (more than 16 ounces)	4 (8.5)	1 (2.2)
Mean ± SD	2.15 ± .884[@a]	1.96 ± .842[#a]
Over the last month, how many times per month, week, or day did you eat fruit? Count any kind of fruit--fresh, canned, and frozen. Do not count juices. Include fruit you ate at all mealtimes and snacks.		
Never	1 (2.1)	0
1-3 times last month	2 (4.2)	1 (2.0)
1-2 times per week	9 (18.8)	7 (14.3)

3-4 times per week	10 (20.8)	9 (18.4)
5-6 times per week	7 (14.6)	3 (6.1)
1 time per day	9 (18.8)	12 (24.5)
2 times per day	8 (16.7)	15 (30.6)
3 times per day	2 (4.2)	1 (2.0)
4 times per day		1 (2.0)
Mean ± SD	4.85 ± 1.713[!a]	5.47 ± 1.660[‡a]
Each time you ate fruit, how much did you usually eat?		
Less than 1 medium fruit (less than 1/2 cup)	4 (8.3)	4 (8.2)
1 medium fruit (about 1/2 cup)	32 (66.7)	31 (63.3)
2 medium fruits	11 (22.9)	9 (18.4)
More than 2 medium fruits (more than 1 cup)	1 (2.1)	5 (10.2)
Mean ± SD	2.19 ± .607[!a]	2.31 ± .769[‡a]
Over the last month, how often did you eat lettuce salad (with our without other vegetables)?		
Never	3 (6.1)	1 (2.0)
1-3 times last month	14 (28.6)	6 (12.2)
1-2 times per week	8 (16.3)	18 (36.7)
3-4 times per week	13 (26.5)	11 (22.4)
5-6 times per week	8 (16.3)	6 (12.2)
1 time per day	3 (6.1)	3 (6.1)
2 times per day	0	2 (4.1)
3 times per day	0	2 (4.1)
Mean ± SD	3.37 ± 1.380[‡a]	3.86 ± 1.568[‡a]
Each time you ate French fries or fried potatoes, how much did you usually eat?		
Did not eat French fries or fried potatoes	27 (57.4)	31 (64.6)
Small order or less (about a 1 cup or less)	15 (31.9)	13 (27.1)
Medium order (1 1/2 cups)	3 (6.4)	4 (8.3)
Large order (about 2 cups)	2 (4.3)	0
Mean ± SD	1.57 ± .801[@a]	1.44 ± .649[!a]
Over the last month, how often did you eat other white potatoes? Count baked, broiled, and mashed potatoes, potato salad, and white potatoes that were not fried.		
Never	2 (4.1)	0
1-3 times last month	25 (51.0)	26 (53.1)
1-2 times per week	14 (28.6)	11 (22.4)
3-4 times per week	5 (10.2)	11 (22.4)

5-6 times per week	2 (4.1)	1 (2.0)
1 time per day	1 (2.0)	0
Mean ± SD	2.65 ± 1.011[‡a]	2.73 ± .884[‡a]
Each time you ate these potatoes, how much did you usually eat?		
1 small potato or less (1/2 cup or less)	11 (23.9)	15 (30.6)
1 medium potato (1/2 cup to 1 cup)	27 (58.7)	24 (49.0)
1 large potato (1 to 1 1/2 cups)	6 (13.0)	10 (20.4)
2 medium potatoes or more (1 1/2 cups or more)	2 (4.3)	
Mean ± SD	1.98 ± .745[#a]	1.90 ± .714[‡a]
Over the last month, how often did you eat cooked dried beans? Count baked beans, bean soup, refried beans, pork and beans and other bean dishes.		
Never	3 (6.1)	2 (4.1)
1-3 times last month	22 (44.9)	21 (42.9)
1-2 times per week	14 (28.6)	14 (28.6)
3-4 times per week	7 (14.3)	7 (14.3)
5-6 times per week	2 (4.1)	0
1 time per day	0	3 (6.1)
2 days per day	0	2 (4.1)
4 times per day	1 (2.0)	0
Mean ± SD	2.78 ± 1.311[‡a]	2.98 ± 1.407[‡a]
Each time you ate these beans, how much did you usually eat?		
Less than 1/2 cup	13 (27.1)	8 (16.3)
1/2 to 1 cup	28 (58.3)	31 (63.3)
1 to 1 1/2 cups	5 (10.4)	9 (18.4)
More than 1 1/2 cups	2 (4.2)	1 (2.0)
Mean ± SD	1.92 ± .739[!a]	2.06 ± .659[‡a]
Over the last month, how often did you eat other vegetables? DO NOT COUNT: Lettuce salads, white potatoes, cooked dried beans, vegetables in mixtures, such as in sandwiches, omelets, casseroles, Mexican dishes, stews, stir-fry, soups, etc.; rice. COUNT: All other vegetables--raw, cooked, canned, and frozen.		
1-3 times last month	9 (18.8)	1 (2.0)
1-2 times per week	10 (20.8)	8 (16.3)
3-4 times per week	6 (12.5)	13 (26.5)
5-6 times per week	6 (12.5)	8 (16.3)
1 time per day	5 (10.4)	4 (8.2)

2 days per day	10 (20.8)	7 (14.3)
3 times per day	2 (4.2)	6 (12.2)
4 times per day	0	2 (4.1)
Mean ± SD	4.54 ± 1.957[!a]	5.24 ± 1.877[‡a]
Each of these times that you ate other vegetables, how much did you usually eat?		
Less than 1/2 cup	6 (12.5)	5 (10.2)
1/2 to 1 cup	33 (68.8)	32 (65.3)
1 to 2 cups	6 (12.5)	11 (22.4)
More than 2 cups	3 (6.3)	1 (2.0)
Mean ± SD	2.13 ± .703[!a]	2.16 ± .624[‡a]
Over the last month, how often did you eat tomato sauce? Include tomato sauce on pasta or macaroni, rice, pizza and other dishes.		
Never	1 (2.0)	0
1-3 times last month	16 (32.7)	15 (30.6)
1-2 times per week	20 (40.8)	23 (46.9)
3-4 times per week	9 (18.4)	8 (16.3)
5-6 times per week	3 (6.1)	2 (4.1)
1 time per day	0	1 (2.0)
Mean ± SD	2.94 ± .922[‡a]	3.00 ± .913[@a]
Each time you ate tomato sauce, how much did you usually eat?		
About 1/4 cup	19 (40.4)	18 (38.3)
About 1/2 cup	19 (40.4)	19 (40.4)
About 1 cup	6 (12.8)	7 (14.9)
More than 1 cup	3 (6.4)	3 (6.4)
Mean ± SD	1.85 ± .884[@a]	1.89 ± .890[@a]
Over the last month, how often did you eat vegetable soups? Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables.		
Never	13 (27.1)	6 (12.5)
1-3 times last month	28 (58.3)	24 (50.0)
1-2 times per week	4 (8.3)	9 (18.8)
3-4 times per week	3 (6.3)	6 (12.5)
5-6 times per week	0	3 (6.3)
Mean ± SD	1.94 ± .783[!a]	2.50± 1.072[!b]
Each time you ate vegetable soup, how much did you usually eat?		

Less than 1 cup	10 (23.3)	9 (20.0)
1-2 cups	30 (69.8)	33 (73.3)
2-3 cups	2 (4.7)	1 (2.2)
More than 3 cups	1 (2.3)	2 (4.4)
Mean ± SD	1.86 ± .601[%a]	1.91 ± .633[$a]
Over the last month, how often did you eat mixtures that included vegetables? Count such foods as sandwiches, casseroles, stews, stir-fry, omelets, and tacos.		
Never	1 (2.0)	0
1-3 times last month	9 (18.4)	6 (12.5)
1-2 times per week	13 (26.5)	14 (29.2)
3-4 times per week	13 (26.5)	13 (27.1)
5-6 times per week	5 (10.2)	7 (14.6)
1 time per day	4 (8.2)	4 (8.3)
2 days per day	4 (8.2)	2 (4.2)
4 times per day	0	2 (4.2)
Mean ± SD	3.82 ± 1.537[‡a]	4.10 ± 1.653[!a]
Including snacks, how many cups of fruit and 100% fruit juice do you usually eat each day?		
Less than 1/2 cup	8 (16.3)	7 (14.6)
1/2 cup	13 (26.5)	8 (16.7)
1 cup	12 (24.5)	9 (18.8)
1 1/2 cups	5 (10.2)	11 (22.9)
2 cups	4 (8.2)	5 (10.4)
2 1/2 cups	3 (6.1)	5 (10.4)
3 cups	2 (4.1)	2 (4.2)
3 1/2 cups	0	0
4 cups	1 (2.0)	1 (2.1)
4 1/2 cups	0	0
5 cups	0	0
5 1/2 cups	0	0
6 cups or more	1 (2.0)	0
Mean ± SD	3.35 ± 2.305[‡a]	3.58 ± 1.866[!a]
Including snacks, how many cups of vegetables do you usually eat each day?		
Less than 1/2 cup	7 (14.3)	5 (10.2)
1/2 cup	7 (14.3)	7 (14.3)
1 cup	16 (32.7)	11 (22.4)

1 1/2 cups	5 (10.2)	9 (18.4)
2 cups	8 (16.3)	9 (18.4)
2 1/2 cups	2 (4.1)	2 (4.1)
3 cups	3 (6.1)	2 (4.1)
3 1/2 cups	1 (2.0)	1 (2.0)
4 cups	0	1 (2.0)
4 1/2 cups	0	0
5 cups	0	2 (4.1)
5 1/2 cups	0	0
6 cups or more	0	0
Mean ± SD	3.47 ± 1.781‡a	4.04 ± 2.318‡a
How many servings of grains do you eat on average per day? From Healthy Eating Index NOTE: Any food made from wheat, rice, oats, cornmeal, barley or another cereal grain is a grain product. Bread, pasta, oatmeal, breakfast cereals, tortillas and grits are examples of grain products. Examples: 1 serving = 1 slice of bread; 1 cup of ready-to-eat cereal; 1/2 cup cooked rice or pasta.		
Less than 1	2 (4.2)	0
1	5 (10.4)	6 (12.2)
2	17 (35.4)	13 (26.5)
3	14 (29.2)	13 (26.5)
4	6 (12.5)	11 (22.4)
5	3 (6.3)	3 (6.1)
6 or more	1 (2.1)	3 (6.1)
Mean ± SD	3.63 ± 1.265!a	4.02 ± 1.346‡a
How many servings of whole grains do you eat on average per day? Examples: 1 serving = 1 slice whole wheat bread; 5-6 whole grain crackers; 1/2 cup cooked brown rice; 1/2 cup oatmeal.		
Less than 1	9 (18.4)	2 (4.1)
1	13 (26.5)	12 (24.5)
2	13 (26.5)	13 (26.4)
3	11 (22.4)	9 (18.4)
4	3 (6.1)	9 (18.4)
5	0	3 (6.1)
6 or more	0	1 (2.0)
Mean ± SD	2.71 ± 1.190‡a	3.49 ± 1.416‡b

[a-b] Non-parametric, 2-related samples test, and parametric, paired samples t-test with means significantly different at $p < 0.05$ level.
[†]Missing n=4
[‡]Missing n=5
[‡]Missing n=6
[@]Missing n=7
[#]Missing n=8
[$]Missing n=9
[%]Missing n=11

Table 5: Program Outcome Evaluation

Questions	Responses n (%)	
How often do you shop with a grocery list?	**Pre**	**Post**
Never	4 (8.2)	0
Rarely	5 (10.2)	3 (6.1)
Sometimes	15 (30.6)	16 (32.7)
Most of the Time	19 (38.8)	19 (38.8)
Always	6 (12.2)	11 (22.4)
Mean ± SD	3.37 ± 1.093[‡a]	3.78 ± .872[‡b]
When you think about each day of the week, how often is your child physically active for at least 60 minutes each day?		
Never	0	0
Rarely	4 (8.2)	0
Sometimes	17 (34.7)	13 (26.5)
Most of the Time	22 (44.9)	28 (57.1)
Always	6 (12.2)	8 (16.3)
Mean ± SD	3.61 ± .812[‡a]	3.90 ± .653[‡b]
How often do you plan your weekly meals?		
Never	2 (4.3)	0
Rarely	10 (21.3)	8 (17.0)
Sometimes	18 (38.3)	14 (29.8)
Most of the Time	17 (36.2)	23 (48.9)
Always	0	2 (4.3)
Mean ± SD	3.06 ± .870[@a]	3.40 ± .825[@a]
How often does your child help cook meals?		
Never	5 (10.2)	0
Rarely	13 (26.5)	2 (4.1)
Sometimes	29 (59.2)	41 (83.7)
Most of the Time	2 (4.1)	6 (12.2)

Always	0	0
Mean ± SD	2.57 ± .736[‡a]	3.08 ± .400[‡b]
When you think about eat day of the week, how often are you physically active for at least 30 minutes each day?		
Never	0	0
Rarely	7 (14.6)	5 (10.2)
Sometimes	24 (50.0)	23 (42.9)
Most of the Time	12 (25.0)	14 (28.6)
Always	5 (10.4)	7 (14.3)
Mean ± SD	3.31 ± .854[!a]	3.47 ± .868[‡a]
How often does your family eat together each week?		
Never	1 (2.0)	0
Rarely	4 (8.2)	1 (2.1)
Sometimes	7 (14.3)	3 (6.3)
Most of the Time	27 (55.1)	30 (62.5)
Always	10 (20.4)	14 (29.2)
Mean ± SD	3.84 ± .921[‡a]	4.19 ± .641[!b]
How often do you enjoy making meals with your child?		
Never	3 (6.3)	0
Rarely	10 (20.8)	1 (2.0)
Sometimes	23 (47.9)	17 (34.7)
Most of the Time	10 (20.8)	21 (42.9)
Always	2 (4.2)	10 (20.4)
Mean ± SD	2.96 ± .922[!a]	3.82 ± .782[‡b]
How often does your child help in meal planning?		
Never	3 (6.1)	1 (2.0)
Rarely	22 (44.9)	7 (14.3)
Sometimes	22 (44.9)	35 (71.4)
Most of the Time	2 (4.1)	5 (10.2)
Always	0	1 (2.0)
Mean ± SD	2.47 ± .680[‡a]	2.96 ± .644[‡b]
How often do you enjoy making meals?		
Never	1 (2.0)	0
Rarely	5 (10.2)	1 (2.0)
Sometimes	17 (34.7)	18 (36.7)
Most of the Time	20 (40.8)	24 (49.0)
Always	6 (12.2)	6 (12.2)

Mean ± SD	3.51 ± .916[‡a]	3.71 ± .707[‡a]
How often do you need to manage your grocery budget carefully to ensure balanced meals for your family toward the end of the pay period?		
Never	5 (10.4)	5 (10.4)
Rarely	3 (6.3)	4 (8.3)
Sometimes	15 (31.3)	13 (27.1)
Most of the Time	9 (18.8)	15 (31.3)
Always	16 (33.3)	11 (22.9)
Mean ± SD	3.58 ± 1.302[!a]	3.48 ± 1.238[!a]
How often do you make eating together as a family a priority?		
Never	0	0
Rarely	2 (4.1)	4 (8.2)
Sometimes	10 (20.4)	3 (6.1)
Most of the Time	19 (38.8)	24 (49.0)
Always	18 (36.7)	18 (36.7)
Mean ± SD	4.08 ± .862[‡a]	4.14 ± .866[‡a]
How often do the topics of conversation at mealtimes include all family members?		
Never	1 (2.1)	0
Rarely	6 (12.5)	1 (2.0)
Sometimes	6 (12.5)	6 (12.2)
Most of the Time	18 (37.5)	18 (36.7)
Always	17 (35.4)	24 (49.0)
Mean ± SD	3.92 ± 1.088[!a]	4.33 ± .774[‡b]
How often does your child help shop for groceries?		
Never	1 (2.0)	0
Rarely	8 (16.3)	4 (8.2)
Sometimes	23 (46.9)	24 (49.0)
Most of the Time	15 (30.6)	16 (32.7)
Always	2 (4.1)	5 (10.2)
Mean ± SD	3.18 ± .834[‡a]	3.45 ± .792[‡a]
How often would you rather eat out than make the evening meal?		
Never	2 (4.2)	2 (4.1)
Rarely	16 (33.3)	24 (49.0)
Sometimes	19 (39.6)	21 (42.9)
Most of the Time	9 (18.8)	2 (4.1)
Always	2 (4.2)	0

Mean ± SD	2.85 ± .922[!a]	2.47 ± .649[‡b]
How often is it stressful to eat together as a family?		
Never	15 (30.6)	17 (34.7)
Rarely	22 (44.9)	21 (42.9)
Sometimes	9 (18.4)	9 (18.4)
Most of the Time	3 (6.1)	2 (4.1)
Always	0	0
Mean ± SD	2.00 ± .866[‡a]	1.92 ± .838[‡a]
How often does your family actively play together?		
Never	2 (4.3)	1 (2.1)
Rarely	3 (6.4)	4 (8.5)
Sometimes	27 (57.4)	24 (51.1)
Most of the Time	13 (27.7)	17 (36.2)
Always	2 (4.3)	1 (2.1)
Mean ± SD	3.21 ± .806[@a]	3.28 ± .743[@a]
How often do you feel confident with your cooking skills?		
Never	1 (2.0)	0
Rarely	3 (6.1)	1 (2.0)
Sometimes	8 (16.3)	6 (12.2)
Most of the Time	26 (53.1)	22 (44.9)
Always	11 (22.4)	20 (40.8)
Mean ± SD	3.88 ± .904[‡a]	4.24 ± .751[‡b]

[a-b] Non-parametric, 2-related samples test, and parametric, paired samples t-test with means significantly different at $p < 0.05$ level.
[‡]Missing n=5
[!]Missing n=6
[@]Missing n=7

Table 6: Birch Child Feeding Questionnaire

Questions	Responses n (%)	
When your child is at home, how often are you responsible for feeding him/her?	**Pre**	**Post**
Never	0	0
Rarely	1 (2.1)	1 (2.0)
Sometimes	4 (8.3)	2 (4.1)
Most of the Time	11 (22.9)	15 (30.6)
Always	32 (66.7)	31 (63.3)
Mean ± SD	4.54 ± .743[!a]	4.55 ± .679[‡a]

How often are you responsible for deciding when your child's portion size are?		
Never	0	0
Rarely	3 (6.3)	1 (2.1)
Sometimes	6 (12.5)	8 (16.7)
Most of the Time	20 (41.7)	19 (39.6)
Always	19 (39.6)	20 (41.7)
Mean ± SD	4.15 ± .875[!a]	4.21 ± .798[!a]
How often are you responsible for deciding if your child has eaten the right kinds of foods?		
Never	0	0
Rarely	2 (4.3)	0
Sometimes	7 (14.9)	3 (6.3)
Most of the Time	12 (25.5)	18 (37.5)
Always	26 (55.3)	27 (56.3)
Mean ± SD	4.32 ± .887[@a]	4.50 ± .619[!a]
How would you describe yourself during childhood?		
Markedly Underweight	2 (4.2)	0
Underweight	5 (10.4)	7 (14.6)
Normal	27 (56.3)	30 (62.5)
Overweight	14 (29.2)	11 (22.9)
Markedly Overweight	0	0
Mean ± SD	3.10 ± .751[!a]	3.08 ± .613[!a]
How would you describe yourself during adolescence?		
Markedly Underweight	1 (2.1)	0
Underweight	6 (12.5)	5 (10.4)
Normal	28 (58.3)	33 (68.8)
Overweight	12 (25.0)	10 (20.8)
Markedly Overweight	1 (2.1)	0
Mean ± SD	3.13 ± .733[!a]	3.10 ± .555[!a]
How would you describe yourself during your 20s?		
Markedly Underweight	1 (2.1)	0
Underweight	4 (8.3)	2 (4.2)
Normal	31 (64.6)	35 (72.9)
Overweight	8 (16.7)	10 (20.8)
Markedly Overweight	4 (8.3)	1 (2.1)
Mean ± SD	3.21 ± .798[!a]	3.21 ± .544[!a]
How would you describe yourself at present?		

Markedly Underweight	0	0
Underweight	3 (6.3)	0
Normal	13 (27.1)	13 (27.1)
Overweight	18 (37.5)	22 (45.8)
Markedly Overweight	14 (29.2)	13 (27.1)
Mean ± SD	3.90 ± .905[!a]	4.00 ± .744[!a]
How would you describe your child during the first year of life?		
Markedly Underweight	2 (4.2)	2 (4.1)
Underweight	7 (14.6)	5 (10.2)
Normal	37 (77.1)	34 (69.4)
Overweight	2 (4.2)	7 (14.3)
Markedly Overweight	0	1 (2.0)
Mean ± SD	2.81 ± .571[!a]	3.00 ± .707[‡b]
How would you describe your child as a toddler?		
Markedly Underweight	1 (2.1)	1 (2.0)
Underweight	9 (18.8)	4 (8.2)
Normal	37 (77.1)	40 (81.6)
Overweight	1 (2.1)	4 (8.2)
Markedly Overweight	0	0
Mean ± SD	2.79 ± .504[!a]	2.96 ± .498[‡a]
How would you describe your child as a pre-schooler?		
Markedly Underweight	1 (2.1)	0
Underweight	4 (8.5)	1 (2.0)
Normal	39 (83.0)	46 (93.9)
Overweight	3 (6.4)	2 (4.1)
Markedly Overweight	0	0
Mean ± SD	2.94 ± .485[@a]	3.02 ± .249[‡a]
How would you describe your child from Kindergarten through 2nd grade?		
Markedly Underweight	1 (2.1)	0
Underweight	2 (4.2)	2 (4.1)
Normal	37 (77.1)	40 (81.6)
Overweight	7 (14.6)	7 (14.3)
Markedly Overweight	1 (2.1)	0
Mean ± SD	3.10 ± .592[!a]	3.10 ± .421[‡a]
How would you describe your child from 3rd to 5th grade?		
Markedly Underweight	0	0

Underweight	1 (2.1)	2 (4.1)
Normal	33 (70.2)	35 (71.4)
Overweight	11 (23.4)	10 (20.4)
Markedly Overweight	2 (4.3)	2 (4.1)
Mean ± SD	3.30 ± .587[@a]	3.24 ± .596[‡a]
How concerned are you about your child eating too much when you are not around him/her?		
Unconcerned	17 (35.4)	20 (40.8)
A little concerned	18 (37.5)	18 (36.7)
Fairly concerned	7 (14.6)	3 (6.1)
Very concerned	1 (2.1)	6 (12.2)
Concerned	5 (10.4)	2 (4.1)
Mean ± SD	2.15 ± 1.238[!a]	2.02 ± 1.164[‡a]
How concerned are you about your child having to diet to maintain a desirable weight?		
Unconcerned	25 (53.2)	27 (55.1)
A little concerned	5 (10.6)	9 (18.4)
Fairly concerned	9 (19.1)	5 (10.2)
Very concerned	1 (2.1)	3 (6.1)
Concerned	7 (14.9)	5 (10.2)
Mean ± SD	2.15 ± 1.474[@a]	1.98 ± 1.362[‡a]
How concerned are you about your child becoming overweight?		
Unconcerned	19 (40.4)	16 (32.7)
A little concerned	7 (14.9)	15 (30.6)
Fairly concerned	8 (17.0)	6 (12.2)
Very concerned	2 (4.3)	3 (6.1)
Concerned	11 (23.4)	9 (18.4)
Mean ± SD	2.55 ± 1.613[@a]	2.47 ± 1.473[‡a]
I have to be sure that my child does not eat too many sweets (candy, ice cream, cake, pastries).		
Disagree	3 6.3)	8 (16.3)
Slightly disagree	2 (4.2)	2 (4.1)
Neutral	5 (10.4)	4 (8.2)
Slightly agree	12 (25.0)	15 (30.6)
Agree	26 (54.2)	20 (40.8)
Mean ± SD	4.17 ± 1.173[!a]	3.76 ± 1.451[‡b]

I have to be sure that my child does not eat too many high-fat foods?		
Disagree	2 (4.2)	8 (16.3)
Slightly disagree	7 (14.6)	5 (10.2)
Neutral	5 (10.4)	10 (20.4)
Slightly agree	11 (22.9)	15 (30.6)
Agree	23 (47.9)	11 (22.4)
Mean ± SD	3.96 ± 1.254[!a]	3.33 ± 1.375[‡b]
I have to be sure that my child does not eat too much of his/her favorite foods.		
Disagree	4 (8.3)	5 (10.2)
Slightly disagree	5 (10.4)	4 (8.2)
Neutral	11 (22.9)	13 (26.5)
Slightly agree	10 (20.8)	15 (30.6)
Agree	18 (37.5)	12 (24.5)
Mean ± SD	3.69 ± 1.307[!a]	3.51 ± 1.244[‡a]
I intentionally keep some food out of my child's reach.		
Disagree	14 (29.2)	21 (42.9)
Slightly disagree	6 (12.5)	3 (6.1)
Neutral	7 (14.6)	7 (14.3)
Slightly agree	8 (16.7)	8 (16.3)
Agree	13 (27.1)	10 (20.4)
Mean ± SD	3.00 ± 1.611[!a]	2.23 ± 1.403[‡a]
I offer sweets (candy, ice cream, pastries) to my child as a reward for good behavior.		
Disagree	22 45.8)	26 (53.1)
Slightly disagree	9 (18.8)	12 (24.5)
Neutral	5 (10.4)	5 (10.2)
Slightly agree	8 (16.7)	5 (10.2)
Agree	4 (8.3)	1 (2.0)
Mean ± SD	2.23 ± 1.403[!a]	1.84 ± 1.106[‡b]
I offer my child his/her favorite foods in exchange for good behavior.		
Disagree	22 (45.8)	28 (57.1)
Slightly disagree	9 (18.8)	11 (22.4)
Neutral	6 (12.5)	3 (6.1)
Slightly agree	7 (14.6)	6 (12.2)

Agree	4 (8.3)	1 (2.0)
Mean ± SD	2.21 ± 1.383[!a]	1.80 ± 1.136[‡b]
If I did not guide or regulate my child's eating, he/she would eat too many junk foods.		
Disagree	4 (8.5)	8 (16.3)
Slightly disagree	10 (21.3)	9 (18.4)
Neutral	6 (12.8)	9 (18.4)
Slightly agree	10 (21.3)	17 (34.7)
Agree	17 (36.2)	6 (12.2)
Mean ± SD	3.55 ± 1.396[!a]	3.08 ± 1.304[‡b]
If I did not regulate my child's eating, they would eat too many of their favorite foods.		
Disagree	9 (19.1)	6 (12.5)
Slightly disagree	3 (6.4)	10 (20.8)
Neutral	8 (17.0)	11 (22.9)
Slightly agree	13 (27.7)	15 (31.3)
Agree	14 (29.8)	6 (12.5)
Mean ± SD	3.43 ± 1.471[@a]	3.10 ± 1.242[!a]
My child should always eat all of the food on his/her plate?		
Disagree	15 (31.3)	21 (42.9)
Slightly disagree	15 (31.3)	16 (32.7)
Neutral	10 (20.8)	8 (16.3)
Slightly agree	5 (10.4)	3 (6.1)
Agree	3 (6.3)	1 (2.0)
Mean ± SD	2.29 ± 1.202[!a]	2.18 ± 1.467[‡a]
I have to be especially careful to make sure my child eats enough.		
Disagree	19 (39.6)	24 (49.0)
Slightly disagree	11 (22.9)	9 (18.4)
Neutral	8 (16.7)	6 (12.2)
Slightly agree	5 (10.4)	3 (6.1)
Agree	5 (10.4)	7 (14.3)
Mean ± SD	2.29 ± 1.368[!a]	2.18 ± 1.467[‡a]
If my child says, "I'm not hungry", I try to get him/her to eat anyway.		
Disagree	11 22.9)	18 (36.7)
Slightly disagree	12 (25.0)	8 (16.3)

Neutral	10 (20.8)	7 (14.3)
Slightly agree	10 (20.8)	12 (24.5)
Agree	5 (10.4)	4 (8.2)
Mean ± SD	2.71 ± 1.320[!a]	2.51 ± 1.416[‡a]
If I did not guide or regulate my child's eating, he/she would eat much less than he/she should.		
Disagree	22 (45.8)	21 (42.9)
Slightly disagree	10 (20.8)	8 (16.3)
Neutral	9 (18.8)	11 (22.4)
Slightly agree	3 (6.3)	7 (14.3)
Agree	4 (8.3)	2 (4.1)
Mean ± SD	2.10 ± 1.292[!a]	2.20 ± 1.258[‡a]
How much do you keep track of the sweets (candy, ice cream, cake pastries) that your child eats?		
Never	3 (6.3)	4 (8.3)
Rarely	7 (14.6)	6 (12.5)
Sometimes	11 (22.9)	6 (12.5)
Most of the Time	16 (33.3)	22 (45.8)
Always	11 (22.9)	10 (20.8)
Mean ± SD	3.52 ± 1.185[!a]	3.58 ± 1.200[!a]
How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?		
Never	4 (8.3)	3 (6.3)
Rarely	5 (10.4)	5 (10.4)
Sometimes	11 (22.9)	8 (16.7)
Most of the Time	17 (35.4)	22 (45.8)
Always	11 (22.9)	10 (20.8)
Mean ± SD	3.54 ± 1.202[!a]	3.65 ± 1.120[!a]
How much do you keep track of the high-fat food that your child eats?		
Never	3 (6.3)	1 (2.0)
Rarely	10 (20.8)	9 (18.4)
Sometimes	12 (25.0)	12 (26.5)
Most of the Time	17 (35.4)	20 (40.8)
Always	6 (12.5)	6 (12.2)
Mean ± SD	3.27 ± 1.125[!a]	3.43 ± 1.000[‡a]

[a-b] Non-parametric, 2-related samples test, and parametric, paired samples t-test with means significantly different at $p < 0.05$ level.
[‡]Missing n=5

[!]Missing n=6
[@]Missing n=7

Table 7: CDC Quality of Life

Questions	Responses n (%)	
Would you say that in general your health is:	**Pre**	**Post**
Excellent	3 (6.4)	3 (6.4)
Very Good	16 (34.0)	17 (36.2)
Good	20 (42.6)	22 (46.8)
Fair	6 (12.8)	4 (8.5)
Poor	2 (4.3)	1 (2.1)
Mean ± SD	2.74 ± .920[@a]	2.64 ± .819[@a]
Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?		
Mean ± SD	2.98 ± 7.541[!a]	3.33 ± 7.128[#a]
Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 was your mental health not good?		
Mean ± SD	4.23 ± 5.904[!a]	3.16 ± 5.614[‡a]
During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?		
Mean ± SD	2.90 ± 6.227[!a]	2.04 ± 4.814[@a]
Because of any impairment or health problem, do you need the help of other persons with your PERSONAL CARE needs, such as eating, bathing, dressing, or getting around the house?		
Yes	1 (2.1)	1 (2.1)
No	45 (95.7)	46 (95.8)
Don't Know	1 (2.1)	1 (2.1)
Mean ± SD	2.00 ± .209[@a]	2.00 ± .206[!a]
Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around of other purposes?		

Yes	1 (2.1)	2 (4.3)
No	47 (97.9)	44 (95.7)
Don't Know	0	0
Mean ± SD	1.98 ± .144[!a]	1.96 ± .206[#a]
During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?		
Mean ± SD	2.06 ± 6.166[!a]	2.67 ± 5.949[‡a]
During the past 30 days, for about how many days have you felt SAD, BLUE, or DEPRESSED?		
Mean ± SD	2.33 ± 3.738[!a]	2.10 ± 3.525[‡a]
During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?		
Mean ± SD	6.06 ± 6.349[!a]	6.06 ± 7.714[!a]
During the past 30 days, for about how many days have you felt you did NOT get ENOUGH REST or SLEEP?		
Mean ± SD	9.54 ± 8.470[!a]	9.31 ± 8.625[!a]
During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?		
Mean ± SD	15.09 ± 9.634[@a]	16.18 ± 9.899[@a]

[a-b] Non-parametric, 2-related samples test, and parametric, paired samples t-test with means significantly different at $p < 0.05$ level.
[‡]Missing n=5
[!]Missing n=6
[@]Missing n=7
[#]Missing n=8

CHAPTER 5
DISCUSSION

Following the iCook 4-H pilot intervention, families tended to prioritize making healthy meals. Not only did they report planning meals and shopping with a grocery list more frequently, but they also reported making healthy eating a priority and read the 'Nutrition Facts' labels on food more often. Participants became more resourceful with their foodstuffs after attending sessions, significantly reducing the likelihood of running out of monthly food supplies.

Label reading is an important skill because it may impact purchasing decisions, dietary intake, and overall health (80). The 'Nutrition Facts' label is the most readily available source of nutrition information. To increase the effectiveness of this tool, nutrition education efforts directed towards label-reading efforts are needed. Byrd-Bredbenner, Alfieri, and Kiefer (2000) found that a large majority of American women are able to read the 'Nutrition Facts' label and make purchasing decisions based on the listings (80). There are subgroups found to be less proficient at label reading, however, such as women with no postsecondary education and women who perceive their health to be fair or poor (80). This particular sample was highly educated, with most participants completing either a bachelor's degree (31.3%) or some college (29.2%), which may explain the likelihood of label reading.

Label-reading education needs to be directed at subgroups less proficient in this activity. Not only is it important to serve those least proficient in label-reading, labeling education should still be provided to those classified as proficient, because even proficient label readers indicated barriers limiting use of labels (81). The iCook 4-H curriculum specifically taught label reading in one of the sessions with supplementary

reinforcement in others, so it is likely that participants utilized this skill when making food choices for their families. Additionally, youth participants in the iCook 4-H program will become more proficient in label reading at a younger age and develop skills to keep them from being deficient label-readers later in life.

The iCook 4-H program emphasized meal planning in its curriculum. Meal planning practices included budgeting for meals, being resourceful with foodstuffs, and preparing meals consisting of foods varying in color, texture, flavor, and all the food groups from MyPlate. Based on the survey responses, there was a decreased prevalence of budgeting for healthy meals from baseline to post-intervention. Increased emphasis on budgeting for healthy food choices could be a potential area of improvement in the curriculum. However, although this finding can be interpreted in a negative way, an explanation for this finding may be that the iCook lessons taught valuable budgeting tips, such as stocking up on sale items, so meal providers did not have to worry about budgeting as much.

Planning for meals is related to parents' perceived importance of family meals. A mother's belief in the importance of family meals has been shown to increase the likelihood of meal planning, having regularly scheduled meals, and eating together as a family (82). The iCook 4-H program offered tips on how to plan fast, healthy, and convenient family meals that could be prepared by both parent and child. Specific examples of tips offered in the curriculum for helpful meal-planning and budgeting tips included not shopping when tired or hungry, looking at weekly grocery ads and planning meals based on sale items, reading the 'Nutrition Facts' label to find food with the most nutrition for price and for comparing fat, calories, fiber and sodium, comparing brands

versus off brands for taste and price, understanding the concept of unit pricing, purchasing produce in season for best quality and lowest price, stocking up only on sale items regularly used, and comparing the price of convenience foods to the same foods that can be home-prepared (83).

Despite education on reading food labels and reducing sodium intake, participants reported no drastic reduction in sodium intake. Sodium content on food labels has not been shown to increase or decrease customer satisfaction with a particular product (83). Perhaps if there were a hypertensive participant or a participant with a family history of hypertension, sodium awareness would be more pronounced, but if sodium was not perceived as an immediate health threat then consumption would not change, despite being educated on decreasing the nutrient (84). An interesting finding on food purchasing psychology was that the addition of a healthy nutrient, such as whole grain or fiber, into a food product was appealing to consumers (85). For nutrients to decrease, such as fat and sugar, a "reduced" claim was more appealing than a "free" claim (84). For sodium, a similar claim would be "no added salt." According to a purchase intent study based on food labeling by Kim, Lopetcharat, Gerard, and Drake (85), more than 75% of consumers stated that reduced and low claims would positively influence purchase intent, but only 52% of consumers stated that salt free would positively influence purchasing intent (86). With food components such as sodium, fat and sugar, it appears that consumers would rather have a reduced amount than have it completely out of the food system, because these are the nutrients that make food palatable.

Concluding the iCook 4-H intervention, participants reported obtaining significantly fewer meals from fast food restaurants, as well as a decrease in meals from full

service/sit-down restaurants. This finding was encouraging because previous research documents a significant positive relationship between fast food consumption and body mass index (BMI) (86). Factors predicting the likelihood of fast food intake have included lack of cooking skills, dislike for cooking, and perceived convenience of obtaining quick meals (87). Perceived convenience is perhaps the number one factor in determining food choice (87). Although fast food is a popular meal option with its ease of access, time saving, and low cost appeals, fast food consumption may decrease when people become confident in at-home meal preparation. One of the missions of the iCook 4-H program is to educate participants on how to easily prepare healthy meals together as a family.

No changes were observed in regards to family meal attendance as a result of the iCook 4-H pilot according to the Family Meals Survey, but the Program Outcome Evaluation Survey found that families felt like they ate significantly more meals together. Despite conflicting survey results, time conflicts could explain why family meal togetherness is a difficult task. According to my findings, participants reported having all family members present for dinner on average four days per week and for breakfast three days per week. These findings compare to data from a December 2003 Gallup Poll, reporting that slightly more than a quarter (28%) of adults with children under the age of 18 claim that their families eat dinner together at home seven nights a week, and that 24% ate together three or fewer nights a week (88). Perceived maternal time pressures have been found to have a negative impact on children's participation in family meals because of reduced efforts in meal planning (82). Causes of time scarcity in Western societies related to difficulties in prioritizing family meal times include an increased

prevalence of employed parents, a greater percentage of single parents in the workforce, and longer working hours (89). Family meals are a valuable time because they are a time to build strong family bonds and can be used as a vehicle for health promotion (90). The iCook 4-H program was effective in improving aspects of family mealtime, such as including all family members in mealtime conversations. Although the iCook 4-H program does highlight the importance of family meal times at each lesson, through discussions and activities, additional strategies to overcome barriers to eating meals together, such as time management, should be addressed (91).

Based on the food screener scales, there were some notable improvements in fruit, 100% fruit juice, vegetable soup, and whole grain consumption. There was also a significant decrease in regular fat cheese and cheese spread consumption. Previous research has found that female meal preparers who enjoyed cooking, had the highest cooking skills, and were health conscious reported the highest weekly fruit and vegetable consumption (92, 93). Adolescent participation in food purchasing and preparation may also be correlated with a more nutrient-dense diet. A study by Larson, Perry, Story, and Neumark-Sztainer (2006) found that food preparation among adolescents was positively associated with increased fruit and vegetable intake (94). The same trends may hold true for adults. The iCook 4-H sessions taught participants easy ways to incorporate fruits, vegetables, and whole grains into their daily diets, possibly contributing to the intake of these foods. Another possible explanation for the increase in soup consumption could also be attributed to the colder weather conditions when the post-assessment was taken . Soup tends to be a popular meal during the cold weather months.

The program outcome evaluation survey showed many positive outcomes. Adults reported that youth were significantly more likely to help cook family meals, and adults were more confident in their cooking skills. These findings are positive because confidence in cooking and having adequate cooking skills is correlated with more time spent on meal preparation and decreased likelihood of fast food and convenience food consumption (95). Assisting in food preparation may be inversely related with percent energy from fat in the diet and an increased likelihood of meeting the *Healthy People 2010* objectives (94).

Adults reported that youth were significantly more likely to achieve 60 minutes of physical activity a day post-intervention. The iCook curriculum instructs adults and youth how to easily incorporate physical activity into their daily lives and educates about the benefits of physical activity, offering tips such as healthy "downtime," and by providing a large list of activities families can complete together. Interestingly, there was not significant improvement in adult meal provider physical activity levels or active play together as a family. Although it is positive that youth increased their physical activity levels, it is important that adults set a good example with their physical activity level as well.

Activity levels of adult role models have been strongly reflective in children's physical activity levels (65). Children model parental lifestyle habits, and parents who support the physical activities of their children and provide an environment conducive for activity tend to have more physically active children (4). According to Rutkowski and Connelly (2010), there was a positive relationship between both parental and adolescent self-efficacy in being physically active and physical activity level (96). Although parental

self-efficacy was related to his/her own physical activity level, parental self-efficacy did not have an impact on the child's physical activity level (96). An explanation for this finding is that adolescents may have role models other than parents who impact physical activity levels, such as teachers, coaches, or siblings. Perhaps the iCook 4-H sessions provided more self-efficacy for children to be more physically active than parents, explained by the findings that child physical activity significantly increased, while parental physical activity and active family play did not.

Parent-to-child feeding practices and parental child feeding practices were significantly altered following the iCook 4-H program. For example, adults reported significantly decreasing their control of their child's sweets, junk food, and fat intake, and offering food as a reward. The iCook 4-H sessions taught the principles of Ellyn Satter's Division of Responsibility, where the parents' feeding job is to trust their child to decide how much and whether to eat, and the child's job is to eat the amount of food they need and learn to eat the food their parents eat (97). Teaching about positive adult-child feeding relationships is important, because parental control in feeding practices may be detrimental to a child's future eating habits. Parents who exhibit high levels of dietary control towards their children are more likely to rear children who are incapable of reading and being aware of satiation cues (29, 30). Following Satter's advice and having parents practice authoritative feeding practices appears to rear the most nutritionally-adjusted children because of shared parent-child decision-making regarding food choice, and by gaining the skills to effectively manage food-related conflicts (33, 34, 35). The messages provided by the iCook 4-H curriculum instructed participants on desirable

feeding practices, as evidenced by the reported decrease of control on food and decreasing instances of providing food as a reward.

There were no reported significant quality of life (QOL) changes related to overall health, prevalence of physical illness and injury, mental health, and energy levels following the iCook 4-H program. Other programs have found QOL improvements. A study on the Expanded Food and Nutrition Education Program (EFNEP) found that program participation significantly improved the domain of 'being,' which included self-acceptance, self-esteem, health, nutrition, physical activity, personal values, home and purpose in life (98). Social belonging also improved significantly from pre- to post-intervention following the EFNEP program (98). Although there was no notable QOL changes post iCook 4-H intervention, there are possible reasons for this occurrence. Sometimes physical health is beyond the participants' control. The post data, for example, was collected during a time when it was common for more illnesses to be occurring. This time of year when the post data was collected (November) may have also been a factor for no changes in adult activity levels and active family play due to seasonal declines in temperature and sunlight. Injuries preventing participants from completing routine personal needs are beyond the control of the program. Mental and emotional needs are QOL measures that a program of this nature could address, especially in regards to building a sense of community and self-efficacy. Even though fewer participants did report being sad, blue, and depressed post-intervention, these results were not significant. Physical health, such as a reduction in BMI, could be improved as a result of better dietary quality and exercise habits, but again, these results were not significant

because the time between pre and post-assessment may have not been enough time for the newly learned skills to be adopted into habit.

LIMITATIONS

One of the limitations to this study was that this sample was a convenience sample. Convenience samples can be problematic because they can lead to the under-representation or over-representation of particular groups within the sample. This limits the ability to make generalizations from our sample to the population of interest. Since this was a pilot study, there was no control group, so researchers were not able to compare program outcomes with a randomized treatment design. Another limitation was the underrepresentation of some minority groups, such as the Asian population. In Nebraska, this was due to the fact that the centers were located in heavily populated Black and Hispanic communities. There may have been an immediacy effect, where results were more pronounced because the post assessments were taken right after program conclusion when motivation to practice the newly learned skills was still high. If assessments were taken at a later date post-intervention, it cannot be assumed that results would be as pronounced.

CHAPTER 6
CONCULSION

The iCook 4-H pilot intervention successfully taught many meal planning, cooking, and physical activity skills that families put into practice. Families placed more priority on preparing and purchasing healthy meals, evidenced by the increased prevalence of nutrition label reading and reports of being resourceful with monthly meal supplies, while still maintaining the healthfulness of meals. There was a drastic decrease in family meals obtained from fast food and full-service restaurants and increase in fruit and whole grain consumption following the program.

There were many positive outcomes related to family meal preparation and adult-to-child feeding practices. Post-intervention, youth were significantly more involved in the cooking process, and adults became more confident in their cooking skills. Adults decreased their control on their child's sweets, junk food, and fat intake, and likelihood of offering food as a reward, all recommendations taught through the iCook 4-H classes.

Areas of curriculum improvement would be to focus on reducing dietary sodium intake, and continued encouragement for all members to attend family meals and actively play together. Adults need to be positive role models in their physical activity habits. The next step is to address the barriers to reducing sodium intake, family meal attendance, and active play as a family. Participants must be educated why it is necessary to decrease dietary sodium, and time management strategies should be discussed to promote family meal attendance and active family play. The next step in this research will be to add in a randomized control, treatment design to test the iCook 4-H program.

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Appendices

Appendix A: Recruitment

Eligibility Criteria

Recruiting for the project includes selecting a convenience sample of family dyads of 9-10 year old youth and the primary adult meal preparer for the pilot (n=12). Six dyads per site.

- Child age 9-10 years
- Primary adult meal preparer
- Free from life-threatening illness or other conditions and/or activity-related medical restrictions that would prevent participation in a face-to-face nutrition and fitness program
- Regular access to computer with Internet connection

Recruitment Methods
Recruiters at each of the sites will use any of the following methods to recruit research participants.

Educators and/or Paraprofessionals who are on the state iCook teams are to be the primary recruiters, using their usual mechanisms for recruiting participants into their programs. Making contacts with 4-H programs, if they are not directly involved with those programs, should be the number one method for recruitment, so that youth who are typically part of 4-H programming will be invited to participate in iCook-4H and/or share the information with their friends who are not typically part of 4-H programs.

Educators and Paraprofessionals may present the information at team meetings and give letters/flyers to Extension Staff, specifically 4-H Staff, to spread the word about the program. Informational news releases in Cooperative Extension publications should be considered.

Recruiters are to make personal contact with potential participants, get a preliminary commitment, including names and contact information. This contact information should be given/emailed to their state campus coordinator who will follow up with a phone call to detail the project and make appointments for assessments.

Direct contact may be made by:

- Visiting existing 4-H classes, day-camps, summer camps
- Visiting other existing Cooperative Extension Programming
- Visiting Girl and Boy Scouts Clubs and Girls and Boys Clubs with recruitment materials for both youth and adults.

- Visiting elementary classes or working with teachers to get list of potential participants (if school starts in early August)
- Host informational tables at community family-oriented events.
- Visit community agencies, churches, and other social events.

Indirect methods may be used as needed

When indirect methods are used, the number or email for the potential participant to contact should be the state Educator. Then the Educator is to forward the contact information to the state campus coordinator.

- Send e-mail messages through community agencies, churches, and other social network sites.
- Post flyers in community centers, YMCAs, after-school locations, and other public locations.
- Place news releases/announcements in local newspapers.
- Provide interviews on local television about the program.
- Provide flyers to be given to students during elementary open house at or before school starts. (If school starts in early August)

Recruitment Materials
Recruitment emails, flyers, and informational letters are located at the end of this document. PIs or campus coordinators at each state will need to fill in state-specific information before printing or distributing materials. When posting flyers, tear off a few of the perforated tabs from the flyers so it looks like others have already taken the contact information.

How will you know when recruitment efforts can stop?
Campus coordinators are the control point for determining state-specific quotas have been reached. Recruiters and campus coordinators should be in daily contact by email during the recruitment phase updating each other with

- names/numbers of potential participants,
- names/numbers of those who have assessment appointments, and
- names/numbers of those who have completed assessments and are counted officially as participants.

Campus coordinators are to inform the recruiters when the pilot has 12 dyads that are officially participants (Pilot). At that point, all remaining potential participants (i.e., names are on list) are to be called by the campus coordinator and informed that the study is full.

You may choose to overenroll by 1 adult/child pair at each site.

SCRIPTS for Extension Recruiters (adapt for whether talking to child or adult)

This fall we are offering a new program, called iCook 4-H. It's a 4-H program and also a research project to study how to help kids make choices about what they eat and how physically active they are so that their growth and development will be strong and they will have healthful lifestyles. It will run from the end of August and last until Thanksgiving. The cooking classes will be every other week and each will last two hours. It's for kids and the adult in the house that cooks the most. The youth will get a video camera to make video clips about iCook 4-H for our website.

***Key Points to Cover**:*

- The program is for kids and parents, or the main cook at home
- Child needs to be 9-10 and adult needs to be over the age of 18
- You need to have at least weekly access to the Internet
- The program runs from August from November
- There are six in-person 2-hour classes that happen every other week
- It's a 4-H project and a research study so there are surveys to take for youth and parents.
- Adults/parents will fill out a survey twice which takes about 20 minutes – once in August and once in November
- Children will fill out a survey twice and be measured (weight, height, waist circumference, and blood pressure) each time
- Some children may have the opportunity to wear a monitor to keep track of their physical activity.
    - Adults and children get $100 total for completing the project
    - Child - $10 at each measurement
    - Parent - $10 at each measurement, $10 at each of the 6 classes

If you are interested in iCook 4-H, please give me your contact information today. I would like to share your phone number with another member of our team at the University of _____ who will call you with details about the project. If you do not get a call within a week, please contact me so I can follow-up. Here is a flyer with information. If you are not sure today, you can call the number on the flyer later. There are a limited number of classes being offered, so I ask you to respond quickly if you are interested.

Use Recruitment Information Form to collect contact information.

Recruitment Information Form

Recruiters Name _____
State_____

Parent Name	Child Name	Phone number	Email Address	Preferred mode of contact and notes	Date of Contact	Method of Contact

Appendix B: Script for Campus Coordinator. Use when calling potential participant, given to the campus coordinator by the Extension Recruiter**.** Use Participant Contact and Appointment Sheet

Name of recruit_____

Hello, _____. My name is Ashley Miller from the University of Nebraska-Lincoln and I am working with Johnna Hall and she/he told me that you are interested in the iCook-4H project. Is this a good time to talk to you about the project? If not, when would be a good time to call again?
_____enter time for another call.

If yes, continue.

Just confirming, our requirements for the project. (must check yes for each item)
YES
_____ you are at least 18
_____your child is between 9-10
_____you prepare most of the family meals
_____you have access to the Internet
_____you can participate in iCook activities between the end of August and Thanksgiving

If no to any of the above, say, I am sorry but you are not eligible for our study. Thank you for your interest in our work. Good-bye

Continue if meet eligibility.

iCook is a 4-H program and also a research project to study how to help kids make better choices about what they eat and how physically active they are to strengthen their growth and development so they will have healthful lifestyles now and in the future.

The unique aspect is that it is designed for both the child and the parent to participate together. You will be able to cook and take some food home. The focus is on being active together through cooking and eating as a family and having fun together. Your child will get a camera to make videos of cooking and being physically active at home to upload on our study website. The program will start in the end of August and last until Thanksgiving. The classes will be 2 hours long, every other week.

Because it is a study, we are asking you and your child to complete some questionnaires, about health habits and cooking skills and your child to have physical measurements taken at the beginning and end of the project. We will ask your child to wear a monitor to measure physical activity for 1 week at the beginning and end of the study. You and your child will each get $10. In addition, you will get $10 at each session you attend. The total amount is $100.

iCook is not only about cooking and having fun with your child, you will also be helping us because there are 4-H groups in 5 states all working together to learn more about helping our children be smart in the kitchen, physically strong and have healthy, active lifestyles.

Would you like to sign up for iCook and make an appointment for the assessments? I am scheduling them for _____

_____ yes _____no

Here is your scheduled time _____.

Would you rather be called or emailed the day before as a reminder?

Participant Contact and Appointment Sheet

Participant Name:_____
Child Name:_____

Mailing Address:_____
Phone Number:_____

Date/Time: _____ **August Appointment**

Date/Time: _____ **November Appointment**

Notes:

Did the participant miss their August Assessment? Y N When is there rescheduled date? _____

Did the participant miss their November Assessment? Y N When is there rescheduled date? _____

If Participant does not want to participate please indicate refusal reason*:*

Enter contact_____

Appendix C: Protocols for Assessment

Responsibility of Site Primary Investigators

- Site PIs are ultimately responsible for ensuring that assessment protocols described in this manual are followed precisely.
- Proper training of all those who will conduct the assessments is required.
- The site PI is responsible for calculating the inter-observer error for all assessors at the site after training and before measurements start and verifying that all researchers are verified for collecting data.

General Study Procedures

- All assessments are conducted at pre and post assessment.
- The assessment site should be set up for ease of moving children and adults through assessments. The set up should ensure privacy for participants to be assessed individually. Depending on site, researchers may use stations for each assessment, providing for privacy with the use of screens. Cardboard buffers may be used to surround computers/laptops. Several rooms may be available for setting up different stations.
    - Station 1: Consent and Assent. Adult must sign form to proceed with assessments
    - Station 2: Online computer survey
        - Adults take survey
    - Station 3: Anthropometrics
        - Children complete anthropometric assessments
    - Station 4: Blood Pressure and Tanner Staging
        - Children have blood pressure assessed
        - Children have Tanner Stage assessed
    - Station 2: Online computer survey
        - Children take survey
        - Adults assess children with Block Food and Activity Screeners, as needed
    - Station 5: Accelerometers
        - Children are fitted with monitors. Initializing can occur while children are taking the survey. Care must be taken to ensure that the child is fitted with the correct initialized accelerometer.
    - Station 6. Provide Incentives.
        - Provide $10 to both the adult and child.

          Have adult and child sign a receipt that states they received the $10.

Assessment Procedure

a. **Review Sample Hard Copy of Informed Consent and Assent Forms**
b. Before you conduct the assessments, review a hard copy of the state-specific informed consent with adult and the assent with the child and have adult sign the informed consent form. Prior to conducting the assessments, confirm the form you are to use with your PI.
    a. If adult does not agree to sign the form, thank them for their time, let them know they are ineligible for the study.
c. If planning to take pictures of participants, have them sign the standard university photo release form.
d. Build rapport with the participant during this assessment period.
e. Keep the signed copy for state records
a. **Complete iCook-4H Project Data Collection Form**
b. Check to see that participants have appropriate clothing for the physical assessment. If not, please ask them to change into the clean, light clothing that you have available (i.e. t-shirt and gym shorts).
c. Fill in the contact information on the top part of the Data Collection Form.
d. Conduct the assessments. You will need to do <u>two</u> measurements of height, weight, waist circumference, and blood pressure and then average the two measurements.
e. Assist the adult and child in moving from one station to another.
f. Provide adult and child with incentives using state protocols. Make sure you have them sign that they received it on the Data Collection Form. Each campus coordinator may want to keep a spreadsheet of names, ID numbers and record of compensation for all participants.
g. Enter data and contact information (address and phone number) from the Data Collection Form into the iCook-4H website *immediately* after assessments are completed.

1. **Enter Physical Assessment Data**
    a. Log-on to the website (www.icook4h.com) with your user name and password.
    b. Click on People
    c. Select Participant
    d. Enter information in appropriate text box.
2. **Securely Store Data Collection Forms**
    a. After the physical assessment and/or entering physical assessment data, file the Data Collection Form in a secure location such as in a locked file cabinet.
    b. Once you have completed pre and post assessments, send a photocopy of page 2 of each participant's Data Collection Form and mail to Douglas Mathews at Department of Food Science and Human Nutrition 5735 Hitchner Hall Orono, ME 04469. Copies can be scanned and emailed if desired to Douglas.mathews@umit.maine.edu.
3. **Verify Participant Data**
    a. The campus coordinator must designate a person (other than the one who entered the data) to verify the accuracy of each participant's data. Verification is done by checking the data against the Data Collection Form. It is recommended to do this daily. Please email Douglas Mathews at douglas.mathews@maine.edu when you have completed the verification of all data but no later than 2 weeks following completion of assessments.

Appendix D: iCook-4H DATA COLLECTION FORM for Pilot Test

Adult Name: Last, First **Child Name:** Last, First		**Gender** (circle) Male Female **Gender** (circle) Male Female
Adult Birthdate (mo/day/yr) **Child Birthdate** (mo/day/yr)		**Year in School** (circle) First Second Third
HOME ADDRESS:		
DAY PHONE # (with area code):	**CELL PHONE #** (with area code):	**EMAIL ADDRESS**:
BEST WAY TO CONTACT (check any applicable box): □ email □ day phone □ cell phone □ Other, specify:		
METHOD OF RECRUITMENT (explain how participant was recruited):		

NOTE: The following is for compensation purposes. Each state will determine whether SSN and/or participant signature is required.

	Pre Assessment	**Post Assessment**
Compensation given at time of assessment?	□ YES □ NO	□ YES □ NO
Signature		
Date		

Appendix E. Campus Coordinator Scripts for Missed Appointment and Participant Inactivity

Missed Appointment Phone Call

Hello participant name, I see that you missed your scheduled assessment appointment. I would like to reschedule your appointment. Which of the following times work for you? List Times. Thank you! We look forward to seeing you on new appointment date/time.

Website Inactivity Messages

Campus coordinators will monitor their state's participants for website activity. Children are asked to upload at least 1 video each week. If they are not actively accessing the website to upload videos and view activities, campus coordinators will email the participant with the following message:

Not Uploading Video Script

Hello participant name,

I noticed that you have not uploaded a video recently for the iCook-4H project. Your input is valuable to this program. If anything is wrong with you camera or are having trouble uploading the file, or need help accessing the website please contact me at campus coordinator email. In case you need it, the website address is http://www.icook4h.com.

Campus Coordinator

Not Accessing the Website Script

Hello participant name,

I noticed that you have not recently accessed the iCook-4H website. On the site there are many activities that can help your family to have more enjoyable family meals, some new recipe ideas, be more physically active, and cook together. If you are unable to access the website please let me know by emailing me at campus coordinator email, or calling at campus coordinator phone number. In case you need it, the website address is http://www.icook4h.com.

Campus Coordinator

Appendix F: Consent for Adult and Assent Form for Child– Pilot Test

Thank you for your interest in the iCook, which is a 4-H program and a research study. Adrienne White and her team at the University of Maine, including Cooperative Extension staff, are studying health and fitness of children between 9-10 years old and the adult in their home who makes most of the food. If you agree to be a part of the study, there will be surveys for you and surveys and physical measurements including blood pressure for your child.

The purpose is to study how to help children make choices about what they eat and how physically active they are so that they will grow strong and have healthy lives.

The program will be from August through November. There will be cooking with your child, at home activities about family meal times and physical activity, and Internet activities. There will be 6 cooking classes lasting 2 hours every other week.at _____.

What Will You Be Asked to Do?
You will be asked to complete a 20-minute online survey in August and again in November.

Sample questions are:

- How often do you compare prices before you buy food?
- How concerned are you about your child eating too much when you are not around him or her?
- During the past 30 days, for how many days have you felt sad, blue, or depressed?

You will be asked to visit the program website at least once each week. You will get a login and password for security. There will be educational activities, recipes, and a blog for you to share ideas with other adults in the program. Online activities can be done at home or other places with the Internet.

What will your child be asked to do?
Your child will be asked to take a 20 minute survey and have height, weight, waist, and blood pressure measured. Your child will be asked to pick the outline of a girl's/boy's body that looks most like she/he does. The reason is because children often grow and mature very quickly between 9-10 years old and we want to measure this growth. A male researcher will ask boys and a female researcher will ask girls about their body development.

Sample survey questions are:

- During the past week, how many days did you eat breakfast?
- I can follow a recipe by myself.

- I worry about what will happen to me.

Your child will get a video camera to keep and to make and share video clips of themselves and your family cooking, eating, and being active together. They will be asked to put them on the website. They will have a login and password for security. There will be educational activities and blogging on the website for your child.

Your child may be asked to wear a monitor around the waist to measure physical activity for a week at the start and end of the program. It is to be kept on day and night because it measures all movement.

Benefits to Participation
You and your child will learn cooking skills together and ways to increase family meal times and physical activity. You will help us learn how to help children make healthy choices and lower risk of obesity.

Risks to Participation
There is minimal risk to participating in the study, primarily due to time and inconvenience. Normal kitchen risk is possible and some questions may make you uncomfortable when we ask about your health. Your child may feel uncomfortable when asked about his/her physical development.

Incentive
You and your child will get $10.00 each time you finish the measures for a total of $40 each. You will get $10 at each cooking class you attend (total of $60). Your child will get the video camera to keep.

Confidentiality
The information you give us will be kept private. It will be kept in Dr. White's research room in a password-protected computer for up to eight years at the University of Maine and then destroyed.

All videos and comments posted to the website will be protected by passwords. For privacy please do not share your login with others. Information we take to be sure you get paid will be kept for a year and then destroyed. We will summarize all information and no names will be used when making reports about the program.

Voluntary
Participation in this study is voluntary. You or your child may stop at any time. If you or your child do stop, you will only get the incentives for the measures and classes that you or your child have completed.

Contact Information
Contact Dr. Adrienne White for questions about the research project at 581-3134, Department of Food Science and Human Nutrition at the University of Maine. For questions about your rights as a study participant, contact Gayle Jones, Assistant to the

Maine's Protection of Human Subjects Review Board, at 581-1498.

If you agree that you and your child will be a part of iCook 4-H, please sign below. You will get a copy of this form for your records.

_____

_____

Signature Printed Name

_____

Date

_____

Your child's first and last name

iCook-4H
Pilot Assent Form

My name is _____. I am trying to learn about cooking, family meals and being physically active. If you would like, you can be in my study, which is called iCook-4-H.

If you want to be in my project, your parent or guardian will have to say it is okay and that they agree to be in the project, too. iCook starts with you and your parent cooking together. There are 6 classes this fall. There is a survey on the Internet that will take about 20 minutes. We will ask questions like "How many fruits do you eat each day?" We will measure your height, weight, waist and blood pressure, which will take about 10 minutes. We will also ask you to look at an outline of a girl's/boy's body showing how bodies change as we grow and have you pick the one that looks most like you.

You will get a video camera to keep and make videos of you and your family cooking, eating and playing together. We will ask you to go to a safe website to share the videos with other children and parents in iCook. We will ask you to go to the website at least once a week to see the fun activities that will be there.

I will keep information you give me private. I will put it together with things I learn about other children, so no one can tell what things came from you. When I tell other people about my study, no one can tell who I am talking about because I will not use your name.

Your parents or guardian have to say it's OK for you to be in the project. After they decide, you get to choose if you want to do it too. If you don't want to be in the project, no one will be mad at you. If you want to be in the study now and change your mind later, that's OK. You can stop at any time. If you are part of this project we will give you $10 each time we measure you. Your parents will also get $10 each time you do because they will be doing the same kinds of activities as you for this project.

My telephone number is ********. You can call me if you have questions about the study or if you decide you don't want to be in the study any more. You can also email me at *********.

I will give you a copy of this form in case you want to ask questions later.

Appendix G: Food Screeners as used in YEAH

Survey from: http://riskfactor.cancer.gov/diet/screeners/fat/percent_energy.pdf

Thinking about your eating habits over the past 12 months. About how often did you eat or drink each of the following foods? Remember breakfast, lunch, dinner, snacks, and eating out. Click on only one bubble for each food.

1) Cold cereal
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

2) Skim milk, on cereal or to drink
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

3) Eggs, fried or scrambled in margarine, butter, or oil
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

4) Sausage or bacon, regular-fat
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week

(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

5) Margarine or butter on bread, rolls, pancakes
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

6) Orange juice or grapefruit juice
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

7) Fruit (not juices)
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

8) Beef or pork hot dogs, regular-fat
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week

(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

9) Cheese or cheese spread, regular-fat
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

10) French fries, home fries, or hash brown potatoes
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

11) Margarine or butter on vegetables, including potatoes
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

12) Mayonnaise, regular-fat
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day

(9) Choose not to answer

13) Salad dressings, regular-fat
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

14) Rice
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

15) Margarine, butter, or oil on rice or pasta
(1) never
(2) Less than once per month
(3) 1-3 times per month
(4) 1-2 times per week
(5) 3-4 times per week
(6) 5-6 times per week
(7) 1 time per day
(8) 2 or more times per day
(9) Choose not to answer

16) Over the past 12 months, when you prepared foods with margarine or ate margarine, how often did you use a reduced-fat margarine?
(1) Didn't Use Margarine
(2) Almost Never
(3) About ¼ of the time
(4) About ½ of the time
(5) About ¾ of the time
(6) Almost always or always
(7) Choose not to answer

17) Overall, when you think about the foods you ate over the past 12 months, would you say your diet was high, medium, or low in fat?
(1) High
(2) Medium
(3) Low
(4) Choose not to answer

Survey: NCI Fruit and Vegetable Screener
Available at: **http://riskfactor.cancer.gov/diet/screeners/fruitveg/allday.pdf**

Think about what you usually ate last month. Please think about all the fruits and vegetables that you ate last month. Include those that were:

- ***Raw and cooked,***
- ***Eaten as snacks and at meals***
- ***Eaten at home and away from home (restaurants, friends, take-out), and***
- ***Eaten alone and mixed with other foods.***

Report how many times per month, week, or day you ate each food, and if you ate it, how much you usually had.
If you mark "never" for a question, follow the "Go to" instruction.
Choose the best answer for each question. Mark only one response for each question.

1) Over the last month, how many times per month, week, or day did you drink **100% juice** such as orange, apple, grape, or grapefruit juice? **Do not count** fruit drinks like Kool-Aid, lemonade, Hi-C, cranberry juice drink, Tang, and Twister. Include juice you drank at all mealtimes and between meals.
(1) never (go to question 3)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

2) Each time you drank **100% juice**, how much did you usually drink?
(1)Did not drink 100% juice
(2) Less than ¾ cup (less than 6 ounces)
(3) ¾ to 1¼ cup (6 to 10 ounces)
(4) 1¼ to 2 cups (10 to 16 ounces)
(5) More than 2 cups (more than 16 ounces)
(6) Choose not to answer

3) Over the last month, how many times per month, week, or day did you eat **fruit?** Count any kind of fruit—fresh, canned, and frozen. **Do not count** juices. Include fruit you ate at all mealtimes and for snacks.
(1) never (go to question 5)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

4) Each time you ate **fruit,** how much did you usually eat?
(1) Did not eat fruit
(2) Less than 1 medium fruit (less than ½ cup)
(3) 1 medium fruit (about ½ cup)
(4) 2 medium fruits (about 1 cup)
(5) More than 2 medium fruits (more than 1 cup)
(6) Choose not to answer

5) Over the last month, how often did you eat **lettuce salad (with or without other vegetables)?**
(1) never (go to question 7)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

6) Each time you ate **lettuce salad**, how much did you usually eat?
(1) Did not eat lettuce salad
(2)About ½ cup
(3) About 1 cup
(4) About 2 cups
(5) More than 2 cups
(6) Choose not to answer

7) Over the last month, how often did you eat **French fries** or **fried potatoes?**

(1) never (go to question 9)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

8) Each time you ate **French fries** or **fried potatoes,** how much did you usually eat?
(1) Did not eat French fries or fried potatoes
(2)Small order or less (About 1 cup or less)
(3) Medium order (About1½ cups)
(4) Large order (About 2 cups)
(5) Super-Size order or more (About 3 cups or more)
(6) Choose not to answer

9) Over the last month, how often did you eat **other white potatoes?** Count **baked, boiled,** and **mashed potatoes, potato salad,** and **white potatoes that were not fried.**
(1) never (go to question 11)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

10) Each time you ate **these potatoes,** how much did you usually eat?
(1) Did not eat these types of potatoes
(2)1 small potato or less (1/2 cup or less)
(3) 1 medium potato (1/2 to 1 cup)
(4) 1 large potato (1 to 1½ cups)
(5) 2 medium potatoes or more (1½ cups or more)
(6) Choose not to answer

11) Over the last month, how often did you eat **cooked dried beans?** Count **baked beans, bean soup, refried beans, pork and beans** and **other bean dishes.**

(1) never (go to question 13)

(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

12) Each time you ate **these beans,** how much did you usually eat?
(1) Did not eat cooked dried beans
(2)Less than ½ cup
(3) ½ to 1 cup
(4) 1 to 1½ cups
(5) More than 1½ cups
(6) Choose not to answer

13) Over the last month, how often did you eat **other vegetables?**

DO NOT COUNT:
- Lettuce salads
- White potatoes
- Cooked dried beans
- Vegetables in mixtures, such as in sandwiches, omelets, casseroles, Mexican dishes, stews, stir-fry, soups, etc.
- Rice

COUNT: All other vegetables—raw, cooked, canned, and frozen

(1) never (go to question 15)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

14) Each of these times that you ate **other vegetables,** how much did you usually eat?

(1) Did not eat these vegetables

(2)Less than ½ cup
(3) ½ to 1 cup
(4) 1 to 2 cups
(5) More than 2 cups
(6) Choose not to answer

15) Over the last month, how often did you eat **tomato sauce**? Include tomato sauce on pasta or macaroni, rice, pizza and other dishes.
(1) never (go to question 17)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

16) Each time you ate **tomato sauce,** how much did you usually eat?
(1) Did not eat tomato sauce
(2)About ¼ cup
(3) About ½ cup
(4) About 1 cup
(5) More than 1 cup
(6) Choose not to answer

17) Over the last month, how often did you eat **vegetable soups?** Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables.
(1) never (go to question 19)
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

18) Each time you ate **vegetable soup,** how much did you usually eat?
(1) Did not eat vegetable soup
(2)Less than 1 cup

(3) 1 to 2 cups
(4) 2 to 3 cups
(5) More than 3 cups
(6) Choose not to answer

19) Over the last month, how often did you eat **mixtures that included vegetables?** Count such foods as sandwiches, casseroles, stews, stir-fry, omelets, and tacos.
(1) never
(2) 1-3 times last **month**
(3) 1-2 times per **week**
(4) 3-4 times per **week**
(5) 5-6 times per **week**
(6) 1 time per **day**
(7) 2 times per **day**
(8) 3 times per **day**
(9) 4 times per **day**
(10) 5 or more times per **day**
(11) Choose not to answer

20) Including snacks, how many cups of fruit and 100% fruit juice do you usually eat each day?
(1) Less than ½ cup
(2) ½ cup
(3) 1 cup
(4) 1 ½ cups
(5) 2 cups
(6) 2 ½ cups
(7) 3 cups
(8) 3 ½ cups
(9) 4 cups
(10) 4 ½ cups
(11) 5 cups
(12) 5 ½ cups
(13) 6 cups or more
(14) Choose not to answer

21) Including snacks, how many cups of vegetables do you usually eat each day?
(1) Less than ½ cup
(2) ½ cup
(3) 1 cup
(4) 1 ½ cups
(5) 2 cups
(6) 2 ½ cups
(7) 3 cups
(8) 3 ½ cups

(9) 4 cups
(10) 4 ½ cups
(11) 5 cups
(12) 5 ½ cups
(13) 6 cups or more
(14) Choose not to answer

The next 2 questions are about grains.

22) How many servings of <u>grains</u> do you eat on average per day?
From Healthy Eating Index
NOTE: Any food made from wheat, rice, oats, cornmeal, barley or another cereal grain is a grain product. Bread, pasta, oatmeal, breakfast cereals, tortillas and grits are examples of grain products.
Examples: 1 serving = 1 slice of bread; 1 cup of ready-to-eat cereal; ½ cup cooked rice or pasta
1) Less than one
2) 1
3) 2
4) 3
5) 4
6) 5
7) 6 or more
8) Choose not to answer

23) How many servings of <u>whole grains</u> do you eat on average per day?
NOTE: All grains begin as whole grains; however, if after milling they keep all the parts of the original grain in their original proportions they are still considered a whole grain. Whole grains should be the first ingredient listed on the label.
Examples: 1 serving = 1 slice whole wheat bread; 5-6 whole grain crackers; ½ cup cooked brown rice; ½ cup oatmeal
1) Less than one
2) 1
3) 2
4) 3
5) 4
6) 5
7) 6 or more
8) Choose not to answer

Appendix H: EFNEP Behavior Checklist

This is a survey about ways you plan and fix foods for your family. For these questions, think about the recent past. This is not a test. There are no wrong answers.

	Do Not Do	Seldom	Sometimes	Most of the Time	Almost Always	Choose Not to Answer
How often do you plan meals ahead of time?	❍	❍	❍	❍	❍	❍
How often do you compare prices before you buy food?	❍	❍	❍	❍	❍	❍
How often do you run out of food before the end of the month?	❍	❍	❍	❍	❍	❍
How often do you shop with a grocery list?	❍	❍	❍	❍	❍	❍
This question is about meat and dairy foods. How often do you let these foods sit out for more than two hours?	❍	❍	❍	❍	❍	❍
How often do you thaw frozen food at room temperature?	❍	❍	❍	❍	❍	❍
When deciding what to feed your family, how often do you think about healthy food choices?	❍	❍	❍	❍	❍	❍
How often have you prepared foods without adding salt?	❍	❍	❍	❍	❍	❍
How often do you use the "Nutrition Facts" on the food label to make food choices?	❍	❍	❍	❍	❍	❍

How often do your children eat something in the morning within two hours of waking up?	❍	❍	❍	❍	❍	❍

Appendix I: Birch Child Feeding Questionnaire

The next set of questions is about child feeding. There are no wrong answers. For all questions, when "child" is referred to, answer with the child you have in the iCook 4-H study in mind.

	Never	Rarely	Sometimes	Most of the Time	Always	Choose Not to Answer
When your child is at home, how often are you responsible for feeding him/her?	❍	❍	❍	❍	❍	❍
How often are you responsible for deciding what your child's portion sizes are?	❍	❍	❍	❍	❍	❍
How often are you responsible for deciding if your child has eaten the right kind of foods?	❍	❍	❍	❍	❍	❍

The next set of questions is about yourself. There are no wrong answers.

	Markedly Underweight	Underweight	Normal	Overweight	Markedly Overweight
How would you describe yourself during your childhood?	❍	❍	❍	❍	❍
How would you describe yourself during your adolescence?	❍	❍	❍	❍	❍
How would you describe yourself during your 20s?	❍	❍	❍	❍	❍
How would you describe yourself at	❍	❍	❍	❍	❍

present?						

The next set of questions is about your child. There are no wrong answers.

	Markedly Underweight	Underweight	Normal	Overweight	Markedly Overweigh
How would you describe your child during the first year of life?	❍	❍	❍	❍	❍
How would you describe your child as a toddler?	❍	❍	❍	❍	❍
How would you describe your child as a pre-schooler?	❍	❍	❍	❍	❍
How would you describe your child in Kindergarten through 2nd grade?	❍	❍	❍	❍	❍
How would you describe your child from 3rd to 5th grade?	❍	❍	❍	❍	❍

	Unconcerned	A Little Concerned	Concerned	Fairly Concerned	Very Concerne
How concerned are you about your child eating too much when you are not around him/her?	❍	❍	❍	❍	❍
How concerned are you about your child having to diet to maintain a desirable weight?	❍	❍	❍	❍	❍
How concerned are your about child becoming over weight?	❍	❍	❍	❍	❍

	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Choose Not to Answer
I have to be sure that my child does not eat too many sweets (candy, ice cream, cake, and pastries).	❍	❍	❍	❍	❍	❍
I have to be sure that my child does not eat too many high-fat foods.	❍	❍	❍	❍	❍	❍
I have to be sure that my child does not eat too much of his/her favorite foods.	❍	❍	❍	❍	❍	❍
I intentionally keep some food out of my child's reach.	❍	❍	❍	❍	❍	❍
I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behavior.	❍	❍	❍	❍	❍	❍
I offer my child his/her favorite foods in exchange for good behavior.	❍	❍	❍	❍	❍	❍
If I did not guide or regulate my child's eating, he/she would eat too many junk foods.	❍	❍	❍	❍	❍	❍
If I did not regulate my child's eating, they would eat too many of his/her favorite foods.	❍	❍	❍	❍	❍	❍
My child should always eat all of the food on his/her plate.	❍	❍	❍	❍	❍	❍
I have to be especially careful to make sure my child eats enough.	❍	❍	❍	❍	❍	❍
If my child says "I'm not hungry", I try to get him/her to eat anyway.	❍	❍	❍	❍	❍	❍
If I did not guide or regulate my child's eating, he/she would eat	❍	❍	❍	❍	❍	❍

much less than he/she should.						

	Never	Rarely	Sometimes	Most of the Time	Always	Choose Not to Answer
How much do you keep track of the sweets (candy, ice cream, cake, pastries) that your child eats?	❍	❍	❍	❍	❍	❍
How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?	❍	❍	❍	❍	❍	❍
How much do you keep track of the high-fat food that your child eats?	❍	❍	❍	❍	❍	❍

Appendix J: Family Meal Routine

During the past 7 days, how many times...

	Never	1-2 days	3-4 days	5-6 days	7 days
Did all, or most, of your family living in your home eat dinner or supper (evening meal) together?	❍	❍	❍	❍	❍
Did all, or most of your family living in your home eat breakfast together?	❍	❍	❍	❍	❍
Was at least one parent present when your child ate his/her evening meal?	❍	❍	❍	❍	❍
Was a family evening meal purchased from a fast-food restaurant, and eaten either at the restaurant or at home?	❍	❍	❍	❍	❍
Was a family meal purchased and eaten in other types of restaurants (full-service, sit-down)?	❍	❍	❍	❍	❍
Was a family evening meal delivered to your home (pizza, sandwiches)?	❍	❍	❍	❍	❍
Was a family evening meal picked up as takeout food?	❍	❍	❍	❍	❍

Appendix K: Program Outcome Evaluation

How often do you shop with a grocery list?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

When you think about each day of the week, how often is your child physically active for at least 60 minutes each day?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do you plan your weekly meals?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often does your child help you cook meals?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

When you think about each day of the week, how often are you physically active for at least 30 minutes each day?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often does your family eat together each week?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

When you think about each day of the week, how often is your child physically active for at least 60 minutes each day?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do you plan your weekly meals?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often does your child help you cook meals?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

When you think about each day of the week, how often are you physically active for at least 30 minutes each day?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often does your family eat together each week?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do you enjoy making meals with your child?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often does your child help in meal planning?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do you enjoy making meals?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do you need to manage your grocery budget carefully to ensure balanced meals for your family toward the end of the pay period?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do you make eating together as a family a priority?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do the topics of conversations at mealtimes include all family members?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often does your child help your shop for groceries?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often would you rather eat out than make the evening meal?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often is it stressful to eat together as a family?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often does your family actively play together?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

How often do you feel confident with your kitchen skills?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

Appendix L: CDC Quality of Life

Would you say that in general your health is:

- ❍ Excellent
- ❍ Very Good
- ❍ Good
- ❍ Fair
- ❍ Poor

Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 was your mental health not good?

During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

Because of any impairment or health problem, do you need the help of other persons with your PERSONAL CARE needs, such as eating, bathing, dressing , or getting around the house?

- ❍ Yes
- ❍ No
- ❍ Don't know

Because of any impairment of health problem, do you need to help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around of other purposes?

- ❍ Yes
- ❍ No
- ❍ Don't Know

During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?

During the past 30 days, for about how many days have you felt SAD, BLUE, of DEPRESSED?

During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?

During the past 30 days, for about how many days have you felt you did NOT get ENOUGH REST or SLEEP?

During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?

Appendix M: Demographics

What state do you live in?
- Maine
- South Dakota
- Tennessee
- West Virginia
- Nebraska

What is your name?

What is your iCook 4-H Website User ID?
What is your age in years?

How many children do you have?

What is your current marital status?
- Married
- Widowed
- Divorced
- Single
- In a committed relationship
- Choose Not to Answer

What is the highest education level you have completed?
- Elementary School
- Some High school
- High School
- Some College
- Associates Degree
- Bachelors Degree
- Graduate Degree
- Doctoral Degree
- Choose Not to Answer

What is your primary race?
- White
- Black
- Asian
- Hispanic
- Native American
- Other
- Choose Not to Answer

How much do you weigh (in pounds)?

Do you or any members of your family participate in any of the following? Aid to dependent children/TANF, EFNEP,Free/Reduced price school meals, Medicaid, welfare-to-work, WIC, SNAP, Supplemental security income

- ❍ Yes
- ❍ No
- ❍ Choose Not to Answer

Including yourself, how many total people live in your house? How many are adults? How many are children under age of 18?

_____ Adults

_____ Children